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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY
W. BRAITHWAITE,
LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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CONTENTS OF PART XXVI.

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ARTICLE		AUTHOR	PAGE
1	On the Treatment of Typhus Fever by Sulphate of Quina	*Dr. F. M'Evers*	17
	Ditto	—— *Hayward, Esq.*	19
2	On Eruptive Fevers	*Prof. Bennett*	20
3	On Temporary Albuminuria; more particularly occurring in the course of Certain Febrile, or other Acute Diseases	*Dr. J. W. Begbie*	23
4	Ague treated by Terebinthinate Liniment along the Spine	*M. Aran*	26
5	On the Action of Ozone on Miasmata	— *Schonbein*	26
6	On the Influence exerted by Chronic Diseases upon the Composition of the Blood	*MM. Becquerel & Rodier*	27
7	Statistics of Cancer	*James Paget, Esq.*	28
8	Signs of the Scrofulous Habit	*Dr. Tyler Smith*	28
9	Case of Hydrophobia	— *J. A. Lawrie*	29
10	Case of Hydrophobia in the South of France	*M. Guyon*	33

NERVOUS SYSTEM.

11	Case of Chorea treated by Chloroform	*Dr. Banks*	34
12	Cases of Chorea	— *R. B. Todd*	35
13	On Chorea	— *Merei*	39
14	On Stammering	*Prof. Dunglison*	40
15	On the Relation of Laryngismus to Epilepsy	*Dr. E. Watson*	42
16	Chloroform in Delirium Tremens	*W. Rogan, Esq.*	43
17	On the Treatment of Facial Neuralgia	*M. Cazenave*	43

ORGANS OF CIRCULATION.

18	On some of the Principal Effects Resulting from the Detachment of Fibrinous Deposits from the Interior of the Heart, and their Mixture with the Circulating Blood	*Dr. W. S. Kirkes*	44
19	Case of Death from the Formation of a Fibrinous Concretion in the Heart	— *W. Garstang*	47
20	On Fibrinous Deposits on the Lining Membrane of Veins	*Henry Lee, Esq.*	48
21	Dr. Billing's Theory of the Sounds of the Heart	*George Halford, Esq.*	50
22	On Gallic Acid in Hæmoptysis	*Dr. William Bayes*	51

ORGANS OF RESPIRATION.

23	On the Treatment of Pneumonia	*Dr. R. B. Todd*	52
24	On Topical Medication in the Treatment of Diseases of the Mucous Membrane of the Air-Passages	— *Horace Green*	60
25	On Topical Treatment of Acute Inflammation of the Larynx and Trachea	— *Eben Watson*	68
26	Topical Medication of the Larynx	— *Cotton*	70
27	New Mode of applying Medical Solutions to the Larynx	— *Theophilus Thompson*	70
28	Cauterization of the Glottis in Hooping Cough	*M. Joubert*	71
29	Tannin in Hooping Cough	*Dr. Browning*	71
30	On the Treatment of Croup by Warm Vapour and Emetics	— *William Budd*	71
31	Chlorate of Potash in Croup	*E. F. Sankey, Esq.*	76

ARTICLE		AUTHOR	PAGE
32	On the Oil of the Gadus Carbonarius, or Black Pollack	— *Bagot*	76
33	New Stethoscope	*B. W. Richardson, Esq.*	77
	ORGANS OF DIGESTION.		
34	On an Erysipelatous Affection of the Throat	*Dr. R. B. Todd*	77
35	On the severer forms of Heartburn and Indigestion	— *Henry Hunt*	80
36	Remedy for Indigestion	*John Spurgin, Esq.*	81
37	Spasmodic Action of the Bowels	*Dr. W. S. Oke*	82
38	On the Treatment of Diarrhœa and Dysentery by Sulphuric Acid	*Edgar Sheppard, Esq.*	84
39	Cases of Diarrhœa treated by Sulphuric Acid	*John Hill, Esq.*	86
40	On Matico in Diarrhœa	*M. Modonini*	87
41	Sarcina Ventriculi	*T. E. Amyot, Esq.*	87
42	Bothriocephalus Latus, occurring in an English Child, cured by the Oil of Male Fern	*Dr. Wm. Withey Gull*	88
43	On Anthelmintics	— *Merei*	90
44	On the Structure, Function, and Diseases of the Liver, and on the Action of Cholagogue Medicines	— *C. Handfield Jones*	90
45	Fatty Enlargement of the Liver	*Prof. Bennett*	93
46	On Cirrhosis of the Liver	*Do.*	94
47	On Congestion of the Liver	*Dr. George Budd*	94
48	Treatment of Jaundice	*Do.*	95
49	Practical Remarks on the "Stomatitis Ulcerosa" of Children, with Cases	— *T. W. Mackenzie*	95
	URINARY ORGANS.		
50	On the Pathology and Diagnosis of Renal Diseases	*Dr. G. Johnson*	98
51	On Certain Important Points in the Chemistry and Pathology of the Urine	— *Arthur Hassall*	100
52	On Chronic Degeneration of the Kidneys, with its Various Consequences	*Drs. Burrows & Kirkes*	101
53	On Diabetes	*Prof. Bennett*	106
54	On Bright's Disease of the Kidney	— *Christensen*	107
55	On the Treatment of Nervous Affections of the Bladder	*Dr. S. D. Gross*	109
56	On the Treatment of Paralysis of the Bladder	*Do.*	110
57	Nocturnal Incontinence of Urine	*M. Trousseau*	110
58	On the Administration of Sal Ammoniac in Enlarged Prostate	*M. Vanoye*	111
59	On the Habitual Presence of Sugar in the Urine of the Aged		112
	SURGERY.		
	BONES AND JOINTS.		
60	On Diseases of the Joints	*Samuel Solly, Esq.*	113
61	On Scrofulous and Rheumatic Inflammation of Joints	*Edward Stanley, Esq.*	118
62	Treatment of Bursal Tumours	*E. Stanley, Esq., and E. A. Lloyd, Esq.*	120
63	Case of Enlarged Superficial Bursa and Ganglion	*Henry Smith, Esq.*	122
64	On a New Mode of Reducing Dislocation of the Thumb Backwards	*M. Demarquay*	123
65	On a New Apparatus for the Reduction of Dislocations	*Dr. Broxholm*	124
66	Cases of Ununited Fracture.—Union Promoted by the Introduction of Ivory pegs, according to Dieffenbach's Method	*John Hilton, W. Bowman, W. Fergusson, Esqs., & Dr. Geoghegan*	125
67	On Compound Fractures	*G. J. Guthrie, Esq.*	130

ARTICLE		AUTHOR	PAGE
68	On Fractured Ribs Connected with Emphysema	*John Hilton, Esq.*	135
69	Simple Mode of applying Pressure in Chronic Enlargement of Certain Bones	*Dr. Inman*	140
70	On the Pathology and Treatment of some Obscure cases of long-continued Pain in Bone	*Henry Lee, Esq.*	141
	AMPUTATIONS.		
71	On Amputations	*G. J. Guthrie, Esq.*	141
72	On Secondary Amputations	*Do.*	162
73	Amputation at the Ankle	*Prof. Syme*	163
74	Case of Amputation of Little Finger; dangerous symptoms after the Administration of Chloroform; resuscitation by Galvanism	*John Hilton, Esq.*	164
75	Case of Rapid Necrosis of the Tibia; Amputation above the Knee	*J. Avery, Esq.*	165
76	Case of Gangrene of the Foot from Exposure; Amputation of both Legs; Recovery	*S. Solly, Esq.*	166
	ORGANS OF CIRCULATION.		
77	On Treatment of Wounds of the Palmar Arch	*R. G. H. Butcher, Esq.*	167
78	On the Treatment of Epistaxis	*M. Reveille-Parise*	169
79	Speedy Cure of a Large Erectile Tumour of the Neck, by Injection of Aromatized Wine	*Prof. Riberi.*	170
	ALIMENTARY CANAL.		
80	On a Case of Complicated Hare Lip, and the Method of Treating it	*Richard Quain, Esq.*	171
81	On Materials the best adapted for Filling the Teeth	*Wm. Robertson, Esq.*	172
82	On Cauterising the Dental Nerve	*Dr. W. A. Roberts*	175
83	Case of Strangulated Hernia	*Prof. Fergusson*	176
84	Cases of Hernia	*Bransby B. Cooper, Esq.*	179
85	On Hernia	*William Pirrie, Esq.*	182
86	Obstruction in the Large Intestine, during Forty Days, in which the Ascending Colon was Opened	*John Hilton, Esq.*	185
87	On Diseases of the Rectum	*Richard Quain, Esq.*	187
88	Chloride of Zinc Paste in Fistula in Ano	*E. Lacy, Esq.*	194
89	Case of Wound of the Abdomen	*A. Blacklock, Esq.*	194
90	Irritable Rectum with Constipation.—Treatment by Opiates	*Dr. Barlow*	196
	ORGANS OF URINE AND GENERATION.		
91	On Stricture of the Urethra	*Prof. Syme*	197
92	Stricture of the Urethra and Perineal Section	*Wm. Coulson, Esq.*	199
93	Remarks on the Limit which may be given to Dilatation of the Urethra	*John Hilton, Esq.*	210
94	On Stricture of the Urethra, with a New Method of Treating the Disease	*W. J. Moore, Esq.*	212
95	Case of Traumatic Stricture of the Urethra	*Wm. Coulson, Esq.*	213
96	Mr. Barnard Holt's Stricture Dilator		215
97	Case of Retention of Urine	*John Hilton, Esq.*	216
98	On Lithotomy and Lithotrity	*Wm. Coulson, Esq.*	222
99	Case of Extraction of Large Calculus.—Bilateral Operation with the Double Lithotome of Dupuytren	*Dr. John F. May*	246
100	On Calculi in the Female Bladder	*John Adams, Esq.*	249
101	On Puncturing the Bladder through the Rectum for Complete Retention of Urine	*John Hilton, Esq.*	250
102	On Puncturing the Bladder through the Symphysis Pubis	*H. T. Chapman, Esq.*	251
103	On Hydrocele	*Bransby B. Cooper, Esq.*	253
104	Treatment of Varicocele by Cauterisation	*M. Bonnet*	263
105	On the Treatment of Vesico-vaginal Fistula	*Dr. J. M. Sims*	264

ARTICLE		AUTHOR	PAGE
	SYPHILITIC DISEASES.		
106	On the Treatment of Syphilis	*Prof Bennett*	278
107	On the Employment of Chloroform Injections in the Treatment of Gonorrhœa	*Henry Behrend, Esq.*	280
108	Objections to the Use of Chloroform Injections in Gonorrhœa	*F. I. Keene, Esq.*	281
109	Cases of Gonorrhœa treated by M. Jozeau's Copahine-mège; (a peculiar mode of administering Copaiba)	*Messrs. Lloyd & Poland*	282
110	On the Employment of Aluminized Bougies	*M. Jobert*	284
	DISEASES OF THE SKIN.		
111	On the Present Method of treating Diseases of the Skin	*J. S. Tylor, Esq.*	284
112	On the Application of Gutta Percha in the Treatment of Diseases of the Skin	*Dr. R. J. Graves*	286
113	Cure of Nævus by Subcutaneous Elastic Strangulation	*James Startin, Esq.*	289
114	Local Treatment of Confluent Small-pox	*Henry George, Esq.*	290
115	On the Use of Collodion to Prevent Pitting of the Face in Small Pox	*M. Quarrin Willemier*	291
116	Cachexia Eczematosa in Children	*Dr. W. S. Oke*	292
117	Treatment of Lupus Exedens	*James Startin, Esq.*	292
118	On the Medical Uses of Urate of Ammonia	*Dr. Baur*	293
119	On the Rapid Cure of Itch	*MM. Hardy & Devergie*	293
120	On the Use of Yeast in the Treatment of Boils	*J. R. Mosse, Esq.*	294
121	Operation for Cicatrices from Burns	*Prof. Fergusson*	294
122	Treatment of Contracted Cicatrix	*R. W. Tamplin, Esq.*	294
	DISEASES OF THE EYE AND EAR.		
123	On the Operation for Congenital Cataract	*W. W. Cooper, Esq.*	295
124	On the Operation for Cataract	*J. Dalrymple, Esq.*	298
125	Mr. Bowman's New Operation for the Division and Removal of False Membrane or Opaque Capsule from the Axis of Vision		298
126	Needle, with Moveable Point, for Depressing Cataract; and a New Instrument for Section of the Cornea, in the Operation for Cataract	*M. Langier*	299
127	Practical Remarks on Diseases of the Eye	*James Dixon, Esq.*	300
128	On Helmholtz's Speculum for Examining the Retina in the Living Eye	*Dr. W. R. Sanders*	301
129	Complete Amaurosis cured by the Endermic employment of Strychnia	*M. Riberi*	305
130	On the Use and Abuse of Nitrate of Silver Drops to the Eye	*Dr. T. W. Jones*	305
131	Practical Observations on Diseases of the Ear, with Records of Cases	*W. R. Wilde, Esq.*	306
	MIDWIFERY, AND THE DISEASES OF WOMEN.		
132	On Artificial Dilation of the Os Uteri	*Dr. S. W. J. Merriman*	308
133	On Uterine Hemorrhage	*Dr. Murphy*	310
134	Treatment of Unavoidable Hemorrhage	*Do*	312
135	Case of Placenta Prævia	*W. Bland, Esq.*	312
136	On the Re-inversion of the Uterus	*Dr. S. W. J. Merriman*	313
137	On the Meaning of the Term 'Ulceration,' as at Present Applied to Uterine Diseases	*— T. Snow Beck*	314
138	Intra-uterine Polypus: Descent, after Delivery, beyond the Vulva; Spontaneous Cure	*Dr. Oldham*	316

ADDENDA.

ARTICLE		AUTHOR	PAGE
139	External Use of Chloroform	*Dr. Channing*	321
140	Chloroform in Operations	*Le Gros Clark, Esq.*	324
141	On Calomel and Soda as a Cathartic	*Dr. Hunt*	325
142	Turpentine in Collapse	*C. W. Whitby, Esq.*	325
143	On the Employment of Manganese	*MM. Petroquin & Burin*	326
144	On Disguising the Taste of Quinine	*M. Piorry*	326
145	New Mode of taking Cod-liver Oil	*G. S. Morris, Esq.*	327
146	On a New Mode of applying Leeches	*Dr. C. F. Sloan*	327
147	On Onychia	*Dr. Moriarty*	328
	Ditto	*W. Tagert, Esq.*	328
	Ditto	*Anonymous*	329
	Ditto	*Do.*	330
	Ditto	*Dr. Kirk*	330
	Ditto	*W. E. Lacy, Esq.*	331
	Ditto	*Do.*	333
148	The Cobra de Capello Poison	*Edward Hickman, Esq.*	334
	Ditto	*Dr. J. J. Cole*	334
	Ditto	*— Robert Barnes*	335
	Ditto	*Anonymous*	335
149	New Method of Performing Tracheotomy	*Dr. G. Gerson*	336

SYNOPSIS.—INDEX.

PRACTICAL MEDICINE.

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON THE TREATMENT OF TYPHUS FEVER BY SULPHATE OF QUINA.

By DR. F. M'EVERS, Physician to the Cork Fever Hospital, &c.

[In one of our preceding volumes (Part XXV., p. 17), the reader will find an interesting paper on the treatment of typhus by quinine, from the pen of Dr. Dundas, of Liverpool. There is great merit due to this gentleman in introducing this medicine as a remedy for typhus by seeking to identify the poison of this fever with the remittents and intermittents of the tropics. Dr. Sketc, so far back as 1786, broached a similar opinion. This author says,]

"If the remittents of warm climates are but the continued fevers of this country, in a more violent degree, and if the effects of the bark are admitted in such remittents, does it not necessarily follow that bark would be endowed with similar powers, even in the fevers which every day occur to our notice, I mean those of the typhus kind, which are frequent in all large towns, especially London and Edinburgh."

[As we have before stated in the preceding volumes, Dr. Dundas' plan is to administer the quina in ten grain doses, until dizziness of the head, or tinnitus aurium, is produced; or until a general amelioration of the symptoms takes place. When tinnitus aurium or dizziness of the head are very urgent Dr. D. resorts to an emetic; and he says, if emetics are had recourse to at an early period, the quina is likely to be more successful.]

This treatment is resorted to in all stages of the disease, and frequently in the advanced periods, under circumstances which would be considered by the experienced physician as indicative of the worst form of typhus fever; and this mode of administering quina is almost invariably attended with the happiest results.

Immediately after having become acquainted with Dr. Dundas' views on this subject, several persons labouring under bad maculated typhus were admitted into our hospital, which gave me opportunities of testing the value of his opinions; and I must confess that I pursued the inquiry with much doubt, as I looked on some of the cures related by him to be of too marvellous a kind to justify my adoption of this treatment without further confirmation of its value: however, I have now tested the remedy in nine cases, and, with the exception of one, it has been signally successful. The first of these cases was the following, the notes of which I take from the daily reports of the hospital.

Pat Ryan, aged 28, a labourer, was admitted into the hospital on the 1st Jan., 1852, from Hop Island. His urgent symptom is headache; pulse 100; tongue foul; skin hot; had taken purgatives at home, and was treated since admission in the usual way with salines, ablutions, &c., until the thirteenth day of his illness, when the usual symptoms of bad typhus became apparent. On the previous day his skin was mottled, and now the entire surface has assumed a dusky hue. Pulse 112, feeble; tongue parched, with sordes on the teeth and lips; no sleep; bowels free; some general fulness of the abdomen, with epigastric tenderness; kidneys acting; headache increased, and raves a good deal. He was ordered to take ten grains of sulphate of quina every second hour, and to have broth and four ounces of port wine.

The changed condition of this patient at my next visit was most remarkable: the pulse was considerably reduced; the tongue was moist and cleaning, in fact it had lost the dark colour and parched appearance it presented the day before. The man slept; there was less abdominal fulness and tenderness; the kidneys acted well, and the bowels were free. He took sixty grains of quina, without its having produced dizziness or tinnitus aurium. The medicine was given in the form of mixture with a little sulphuric acid,—the two or three last doses sickening him a little. I then ordered it in the same dose in the form of pills, repeating it every three hours, which he bore without sickness. On this day he took forty grains, and on the following day he was convalescent. It is remarkable that the father of this patient, who was admitted a few days before, passed through the same type of fever, treated in the ordinary way, and died on the fifteenth or sixteenth day of his illness.

The second case was that of a young man, aged 19, admitted on the 14th Jan., for some days under my care, whose urgent symptom was headache, with great prostration of strength. On the eighth day his breathing became very much hurried, unattended, however, with cough, nor did the stethoscope elicit any abnormal sound: the man being remarkably pallid, except during two short exacerbations which occurred in the twenty-four hours. I ordered him aromatic spirit of ammonia mixture, with a small quantity of wine, and a sinapism to his chest. The following morning, on examining the chest, I discovered a purple patch occupying the part to which the mustard had been applied. His respiration was improved, but he complained of intense headache. Pulse 108, and feeble; no sleep. The purple patch induced me to make a careful examination of his body, and on turning him in the bed I observed the lower portion of the back and the nates covered with purple maculæ. The case I looked on then as well adapted for the administration of quina, and, accordingly, I ordered ten grains every two hours, together with broth, and two ounces of port wine. The third dose produced violent headache, with tinnitus aurium, when the medicine was discontinued. At my next visit, on the following morning, all his symptoms were improved; the tinnitus aurium left him in a short time after the medicine was laid aside, and the headache was greatly mitigated; he slept, and expressed himself much better. I placed him again on the quina, when the third dose produced the same results as yesterday, but there was so great an amelioratiom of all his symptoms that I considered him proceeding to convalescence, and gave him only two grains of quina three times a day, after which he rapidly recovered.

The next two cases were females, both of whom presented unfavourable symptoms, and in whom the remedy was equally successful.

The fifth case was one of great interest, exhibiting other symptoms of an unfavourable nature, in addition to those enumerated in the preceeding.

John Eames, aged 55, a smith, was admitted on the 23rd of January, with bad typhus, having been discharged from hospital on the 3rd inst., cured of ordinary fever with bronchial complication. On the ninth day of his second attack he became mottled and talked incoherently; on the tenth day he was not improved; he had no sleep; the tongue was parched and dark, and protruded with difficulty; stools involuntary; pulse 120, and feeble. He was ordered to take ten grains of sulphate of quina every second hour, and to have broth and two ounces of port wine.

Half-past 9, p.m. The quina was commenced at one o'clock; he has taken fifty grains, and appears improved in every respect; he is more collected, and speaks with less difficulty; he has had two large voluntary evacuations from the bowels; the medicine was directed to be continued.

On the 11th day, I found that he had taken sixty grains since my last visit, and although he did not sleep much, and had some singultus in the night, he was much improved in other respects. The pulse had come down to 100; the tongue was still parched and brown, but he was perfectly conscious; he was very deaf and the maculæ were improved in colour. On this day he took only four doses of quina, it having been omitted on account of the "buzzing," as he expressed it, which the remedy produced.

12th day. Pulse 96; tongue moist and cleaning; bowels open, and he passes water freely; to take five grains of sulphate of quina every fourth hour.

13th day. Pulse 84; tongue clean; skin cleaning and scaly; convalescent.

I will not occupy time with the details of all the cases in which I have tried this remedy, but will content myself with the recital of one more case, which occurred within the last few days, and which I consider in every way worthy of observation.

Mary Delany, aged 22, admitted from Ballincollig on the 10th March; nine days ill; headache; petechiæ; pulse 120, and very feeble; tongue parched; got the usual aperient of the hospital.

10th day. One stool; pulse 130, feeble; tongue parched and split; great thirst; respiration hurried; had no sleep; she is often flushed, and in the intervals deadly pale; countenance anxious, with the appearance of suffering; great fulness of abdomen, with tenderness on pressure, especially at the epigastrium; maculæ of a dark brown. She was ordered ten grains of sulphate of quina every second hour, and to have broth and two ounces of red wine.

11th day. Bowels not open; tongue moist and cleaning; pulse 100; kidneys acting.

12th day. At eight p.m. last evening this girl became very stupid; "did not know what to do with her head," as she expressed herself; she also became deaf, and had tinnitus aurium; this state continued until midnight, with occasional sleep, when she became "lighter," and afterwards slept well; the kidneys have acted, but there is no discharge from the bowels; she now presents a totally different appearance from that of yesterday; she is free from headache, her respiration is natural, the tension and fulness of belly have disappeared, but there is still some slight epigastric tenderness; some of the maculæ have disappeared, and the remainder are of a lighter colour. The sulphate of quina to be continued every fourth hour.

13th day. No stool; tongue clean and moist; pulse 84; belly natural, slight epigastric tenderness. The quina to be omitted; broth and wine to be continued; to have a domestic enema.

14th day. Convalescent.

Since the first introduction into Europe of the Jesuits' bark in 1649, the most celebrated writers extolled its efficacy in the treatment of various diseases, but especially in fevers; owing, however, to some cause or other, it fell into disuse; and it is probable that this was occasioned by the many failures which attended its administration; failures which I now feel assured were owing principally to two causes:—first, the bark not having been given in sufficiently large doses; and secondly, the bark not having been always of the genuine kind. Its use was revived by the celebrated Sydenham, and after the time of that eminent man, its excellent qualities were fully established by Hoffman, De Haen, Pringle, Cleghorn, and other practitioners of eminence. And it is worthy of remark that those who were most enthusiastic in praise of this remedy gave it in very large doses. Dr. Clark, a celebrated physician who wrote on fever in the year 1770, was in the habit of prescribing bark in two drachm doses every two hours, and at the same time of exhibiting it by the rectum in the form of enema; he relates that on one occasion in mixing a dose of bark for a patient, he discovered that the apothecary had by mistake put half-an-ounce of bark into each paper instead of two drachms, which he had ordered; the patient had been taking this large dose for a considerable time, and got cured of a bad typhus in consequence. Now, when it is estimated that two pounds of good bark will yield about two hundred grains of sulphate of quina, it must be admitted that Dr. Clarke's treatment of typhus was not far short of the heroic method of the present day introduced by Dr. Dundas. It is unnecessary to advert to the fact that Dr. Clark's patients were taking a different preparation, possessing, however, the same active base.

One great objection to its general use in this country, which may be advanced, is the high price of the salt; but should the remedy be found as efficacious in the practice of others as by Dr. Dundas and myself, I feel assured that its use, when applicable, would eventually constitute the true economy of our fever hospitals.—*Dublin Quarterly Journal, August*, 1852, *p.* 100.

[We have a few interesting remarks on this subject by Mr. Hayward, of Liverpool, who has made particular observations upon eighty successive cases of the typhoid type of fever.]

The first symptom, in twenty of them, was diarrhœa; in twelve, diarrhœa and vomiting; in seven, vomiting alone; the rest began with pain in the head. All had pain in the head afterwards; sixty-six describing it as "lightness"; fourteen

as "heaviness". All had tenderness of abdomen—nine to a great extent. Seventy-one complained of soreness of the flesh over the whole body—some to such an extent that their impression was that they had rheumatism. Seventeen had considerable inflammation in the sub-maxillary glands. Seventy-three had delirium, twenty-one of which were very severe. In all, the tongue became very dry, brown, and cracked; the first crack was generally a deep longitudinal one down the centre of the tongue (even whilst it was clammy and velvety in appearance, and of a milk-and-water colour), extending from the base to nearly the apex; then many transverse and oblique ones. In twenty-four, the skin became rough and brown, with petechiæ observable. In all, the thirst was intense; and the other symptoms of fever were not less evident; therefore suffice it to say, they were well-marked cases of fever of the typhoid character.

In twenty-seven the treatment was commenced in the "first stage"; in fifty-three, in the "second stage". Three were fatal. All the rest recovered more or less quickly.

The principal treatment in all, except one, was the use of disulphate of quina,—so much recommended by Dr. Dundas, of this town,—of course modified according to the predominating symptoms. Thus, if I found the pulse quick, weak, and thready; the tongue cracked, brown, and dry (rough or smooth); great thirst and delirium; no appetite; tenderness of abdomen; soreness of flesh, &c., I put the patient upon disulphate of quina, in solution, at once; four or five grains every two hours. If great restlessness, and no sleep, I added three or four minims of tincture of opium to each dose. If general sinking of the vital powers, some wine or brandy, with beef-tea. If the solution of quina were vomited, it was given in an equal quantity of wine, or wine and water. If the patient continued sinking, I increased the quantity of quina, but never had occasion to extend beyond seven grains per dose. When ringing in the ears occurred, the quantity was decreased, but still kept up till there was a good appetite. If the delirium was intense, the pain in the head described as heavy (which were always strong subjects, whose bowels were confined), with strong pulse, a dose of chloride of mercury, and sometimes a blister to the nape of the neck. If tenderness of abdomen was great, a few leeches, or sinapism. If vomiting, a sinapism over the stomach. If diarrhœa, a little calomel and opium, or diacetate of lead and opium; though this symptom sometimes required nothing more than the tincture of opium given with the quinine.

In seventy-nine cases, marked improvement was observable in the course of twelve hours: the pulse was the first to improve, then the delirium to give way, then the pain in the head, the thirst, the soreness of flesh, tenderness of abdomen, dryness of tongue, and the appetite to improve. A pulse of 120, small and thready, would become 90, softer and fuller; and in the majority of the cases the pain in the head and delirium ceased entirely in the same period, and a rapid improvement followed, with the small exception of two cases of children ten and eleven months old, neither of whom had the medicine regularly, and both were complicated with bronchitis. The eightieth case was that of a woman, in which quina was not used. These three died, evidently from typhus. If the typhoid symptoms were allowed to become well marked, and the patient to sink much, his recovery was slow, and he required wine or brandy. I feel confident, from personal observation, that were the disulphate of quina to be used promptly, and to cinchonism, the mortality even of typhus itself would be very small.—*Lancet*, *Oct.* 9, 1852, *p.* 324.

2.—ON ERUPTIVE FEVERS.

By Professor Bennett, Edinburgh.

[There are certain diseases which may be justly classified under the term eruptive fevers, that is, there are certain diseases of an infectious or contagious character, marked by the peculiarity of an eruption upon the skin, differing in each. Examples of this kind are scarlatina and variola, while, at the same time, plague and glanders must be arranged under the same head.]

The present theory, with regard to the cause of these diseases, is, that it de-

pends upon a morbid poison, a small quantity of which entering the blood produces in that fluid a peculiar change which is analogous to that of fermentation. To distinguish this change in animal from what occurs in vegetable fluids, the term *zymosis* has been introduced by Mr. Farr.

Some of these animal poisons, if excluded from the air, or carefully dried, will retain their communicating property for a longer or shorter time. This enables us to preserve matter for artificial inoculation. Hence also they have been supposed capable of attaching themselves to fomites—that is, substances of a rough surface or downy texture, such as wool, cotton, wearing apparel, dust, &c. It is on this theory that quarantine regulations are founded, the whole of which, together with the facts, real or supposed, that support them, require a thorough revision.

All the animal poisons are distinguished by peculiarities in their mode of incubation and development. Thus a period of latency exists between exposure of the poison and accession of the fever, or first rigor. Again, the eruption appears at different periods after the fever is declared. Thus—

	Period of Latency from	Appears after first Rigor in from
Scarlatina,	4 to 8 days	18 to 24 hours.
Erysipelas,	4 to 7 days	24 to 60 hours.
Variola,	8 to 14 days	48 hours.
Rubeola,	7 or 8 days	72 hours.

All the eruptive fevers, strictly so called, invariably run a natural course, and cannot be cut short. It follows that—

The treatment of febrile eruptions has for its object conducting these cases to a favourable termination. To this end exactly the same general rules are to be followed as I previously gave when speaking of continued fever, and the same indications exist for the use of salines and laxatives, cold to the head, wine and stimulants, and regulation of the diet.

[*Scarlatina.*—After relating two cases of mild and one of severe scarlatina, Dr. Bennett remarks, that great watchfulness is required on the part of the practitioner, especially when the crisis is expected, that if the pulse at all falters, and prostration comes on rapidly, he may be prepared to meet it. When death does occur in a primary attack of scarlatina, it is from the same cause as in death from typhus—it is from congestion of the brain, as indicated by delirium, passing into coma, and followed by prostration of the vital powers.]

The most recent system of treatment which has been brought forward is that recommended by Dr. Andrew Wood; and I notice it in deference to the great experience that gentleman has acquired from his position as physician to Heriot's hospital and other educational establishments in this city, which have been attacked by numerous epidemics of the disease. He considers that the most efficient and safe method of treatment consists in acting powerfully on the skin, with a view of thereby assisting nature to eliminate the scarlatinal poison from the system. As ordinary diaphoretics frequently fail, he has recourse to the following method:—Several common beer bottles, containing very hot water, are placed in long worsted stockings, or long narrow flannel bags, wrung out of water as hot as can be borne. These are to be laid alongside the patient, but not in contact with the skin. One on each side, and one between the legs, will generally be sufficient; but more may be used if deemed necessary. The patient is to lie between the blankets (the head of course being outside) during the application of the bottles, and for several hours afterwards. In the course of from ten minutes to half an hour, the patient is thrown into a most profuse perspiration, when the stockings may be removed. In mild cases, the effect is easily kept up by means of draughts of cold water, and if necessary, the use of two drachm-doses of sp. mindereri every two hours. In severe cases, where the pulse is very rapid—the beats running into each other—where the eruption is either absent or only partial, or of a dusky purplish hue—where the surface is cold—where there is sickness or tendency to diarrhœa—where the throat is aphthous or ulcerated, and the cervical glands swollen, then he follows up the use of the vapour-bath by four or five grain doses of carbonate of ammonia, repeated every three or four hours. Should this be vomited, then brandy may be given in doses proportioned to the age of the patients. Carbonate of ammonia he

considers to act beneficially: 1st, by supporting the powers of life; 2d, by assisting the development of the eruption; and 3d, by acting on the skin and kidneys. Where the vapour-bath was used early in the disease, and its use continued daily, or even twice or thrice a day, according to circumstances, he has found that the chance of severe sore throat was greatly obviated. In regard to supervening dropsy, he considers that, by the use of the vapour-bath, with the other necessary precautions as to exposure, diet, &c., its recurrence is rendered much more rare; in the treatment of the dropsical cases, it was also very useful, and even might be trusted to entirely in some cases. Dr. Wood also condemns all depleting treatment, and even purgatives, during the first ten days, as not only not required, but positively dangerous, as tending to interfere with the development of the eruption. In the later stages, as well as in the dropsy, however, he thinks purgatives are often beneficial.

The general plan of this treatment appears to be so far rational that its object is to hurry forward the disease by applying damp heat to the skin, and by thus assisting nature to make her operations more perfect than they might otherwise be. In other words, by rendering the febrile eruption more complete, diminish the risk of its leaving behind it a tendency to subsequent disease. Whether this plan as a whole will, in practice, prove more extensively beneficial than any other, can only be determined by an extensive trial and careful comparison of the results.

[*Erysipelas* is next considered.]

Erysipelas is opposed to scarlatina, in being the least infectious of the eruptive fevers, in being the least fatal, and in running a much slower course. In many other respects there is a close analogy between them observable in the kind of fever, the sequelæ, and critical discharge of coagulable urine, as lately pointed out by Dr. Alexander Wood and Dr. James W. Begbie. The general indications for treatment are the same. The special treatment is directed by means of topical applications to diminish the local inflammation. For this purpose numerous remedies have been tried,—such as dusting the part with flour, lotion of acetate of lead and opium, cerates, oil, &c., &c.,—any of which serve the purpose of cooling the surface, rendering it more soft, and diminishing irritation.

There can be no doubt that erysipelas is occasionally a fatal disease, from the intensity of the fever, and amount of integument involved. It is generally supposed that when it attacks the face and scalp, it is more dangerous than when a similar amount of surface in any other part is affected. This opinion does not appear to be founded on very exact observation. Even when the scalp is extensively invaded, death from erysipelas is a rare occurrence. On going round the wards of the Hotel Dieu in May 1851, with M. Louis, I saw several severe cases of erysipelas of the scalp, which, I was told, were under no treatment whatever,—because, as M. Louis informed me, according to his experience, erysipelas of the scalp was *never* fatal, unless it occurred in individuals of bad constitutions, or was associated with some complication. I need not say that, without forming any such exclusive opinion as this, it must be very difficult, in a disease that so generally tends to recovery, to judge how far this or that remedy is beneficial. Mr. Hamilton Bell has lately recommended fifteen to twenty drops of tr. ferri muriatis every second hour, as a most beneficial remedy in erysipelas. But how this medicine is more successful than the spontaneous operation of nature, it must be very difficult to determine.

[In considering *Variola*, Dr. Bennett records a case of severe confluent small-pox occurring in a girl aged 7. On December 10th, the hair was cut short, and the face covered with the mercurial ointment thickened with starch. The case terminated favourably, as she was dismissed cured on January 6; the face scarcely presenting any traces of the disease, and affording a marked contrast to the rest of the skin. Speaking of this case Dr. Bennett observes:]

The entire face was so crowded with the papules and minute vesicles of the incipient stage, that there was literally not room to place a pin's head anywhere on the sound skin. It was evident that thewhóle surface of the face would be one mass of suppuration; and such of you as have had an opportunity of observing such a case of the disease, must be aware of its horrid aspect, the excessive agony produced, the great swelling of the eyelids, the dreadful suppuration and fœtor of the discharge, the violent secondary fever, and the frightful cicatrices with

which the countenance is afterwards covered. In this case none of these symptoms were present, and there can be no doubt that the ectrotic treatment really checked the progress of suppuration and modified the disease. From the moment the plaster was applied, all smarting and pain in the face ceased; the eyelids were never swollen; no suppuration occurred; there was no secondary fever; and on the mask leaving the face there was no pitting or suppuration. In other parts of the body the eruption passed through its usual stages, and the girl was dismissed from the house well, thirty days after the first commencement of the eruption. Considering this case was likely to be a very severe one, I felt myself authorised to use every means in my power to check the disease; and as it has been asserted that vaccination, even after the commencement of the eruption, modifies its progress, I caused the girl to be vaccinated on first seeing her. At that time the face, as we have seen, was closely covered with papulæ and vesicles; and I do not think that vaccination alone could have produced the remarkable result we have witnessed. I do not mean to deny altogether the influence of vaccination in such cases, but I have no hesitation in ascribing the beneficial result almost entirely to the ectrotic treatment.—*Monthly Journal of Medical Science, Oct.*, 1852, *p.* 400.

2.—ON TEMPORARY ALBUMINURIA: MORE PARTICULARLY OCCURRING IN THE COURSE OF CERTAIN FEBRILE OR OTHER ACUTE DISEASES.

By Dr. J. W. Begbie, Physician to the New Town Dispensary, Edinburgh, &c.

[Dr. Begbie divides his subject into three parts—*Desquamative Albuminuria*, under which head he classes the urine in erysipelas, Asiatic cholera, and scarlatina; *Inflammatory Albuminuria*, under which he places the urine in the dropsy following scarlatina; and *Critical Albuminuria*, in which he considers the urine in pneumonia and certain cases of typhus. In speaking of the first head, he states his belief that in every case of scarlatina a small amount of albumen would be found on careful examination. This is generally found three or four days after the commencement of desquamation. In examining the urine, both the nitric acid and heat tests should be employed. It should be carefully made for a few days before, and until the process of desquamation is fairly completed. Dr. Begbie believes that after it has once disappeared it will not return.]

The microscopic character of the urine, with which the albumen is invariably associated, is the presence of a considerable amount of epithelium, derived from the different parts of the urinary apparatus. Sometimes the entire epithelial lining of the small tubes of the kidney was present, though certainly not frequently. I do not remember to have ever seen in the urine of simple scarlatina the albuminous or fibrinous casts of the small tubes of the kidney, the appearance of which is so common in the urine of the dropsical affection. Besides epithelium, the urine generally contained amorphous urate of ammonia, sometimes crystalline uric acid; and occasionally, though very rarely, the urine, though examined very soon after micturition, contained crystals of the ammoniaco-magnesian phosphate. In all such there existed a greater than usual amount of epithelium and mucous sediment. It is not uncommon to find octahedral crystals of oxalate of lime in the urine at the same stage of the disease.

The pathological import which the existence of albumen in the urine denotes, is a point on which difference of opinion must still be expected to exist, seeing not only how very different are the facts recorded in regard to the occurrence of albumen, but how varying is the estimation of the importance which is awarded to its presence. While many believe its manifestation to be accidental, and of no importance, there are others who conceive it, if at the time unaccompanied with dropsy, to be its certain prelude. Both of these opinions I have attempted to show are erroneous, and, at least as far as my own observations go, founded on incorrect data. What, then, is the cause of albumen in the urine in simple scarlatina, and what its pathological import? I conceive it to be as essential a symptom of the disease as is desquamation of the cuticle—to be associated to a certain extent with that desquamation—to be, in fact, the result of a desquamative process, which the mucous membranes in this disease, equally with the skin, are subject to. Grant-

ed, then, that this desquamation occurs, when such a change is taking place in the epithelial membrane lining the minute tubes of the kidney, the office of the cells composing which is to eliminate from the blood the matters, solid or fluid, which in the normal exercise of the renal function compose the urine, it surely is not surprising that the albumen from the former should, to a slight amount, enter into the latter. Such I believe to be the cause of its occurrence; nor can I regard its presence as indicating any pathological condition, further than the separation of epithelial cells and their passage in the current of the urine. No symptoms referable to any such condition occur, no febrile reaction, no lumbar pain, no non-elimination of urine, no suppression of its watery parts, not even any diminution in its quantity, and, with the exception alone of the presence of albumen, no marked alteration in any of its sensible qualities. I have said that this albuminous condition of the urine in scarlatina is associated with the cuticular desquamation, it is so in the time of its occurrence, and so it is also as regards its amount; for I have noticed the albumen in the urine to be greatest in amount, and to continue longest, in those cases in which the process of desquamation had taken place to the greatest extent. In those cases of the urine of which no coagulability has taken place —for my more recent experience has shown me a few such—there has been no very marked desquamation, and no direct evidence of any epithelial separation, as shown by examination of the urine. We know that in many cases of scarlatina, especially in those where the eruption, though well-marked, has not been brilliant, extensive, or lasting, it is not uncommon for the desquamative process not to take place at all, or at most to a comparatively very slight extent. Such are the cases in which the coagulability of the urine will perhaps not occur. I say *perhaps*, for in some such I have, notwithstanding, found it. I am still, therefore, disposed to regard the temporary albuminuria of scarlatina as probably as frequent in its occurrence, and of somewhat of the same importance as a symptom, as the desquamation of the cuticle.

[In speaking of the urine in Asiatic Cholera, Dr. Begbie remarks upon the suppression of urine as a marked symptom of a return to the proper quantity of that secretion, marking a favourable change in the disease. In many cases of death from cholera, death seems to have been produced from a poison in the blood, producing coma—such as is ordinarily the case where suppression of urine has occurred.

In Erysipelas, though the urine is frequently found albuminous during convalescence, yet it is not so certainly so as in scarlatina.

Inflammatory Albuminuria.—Under this head Dr. Begbie refers to one example —the Dropsical disease following Scarlatina—as follows:]

Every one who has paid attention to the condition of the urine in this most interesting affection, must have noticed the great dissimilarity subsisting between its external and other characters, and those of the urine in simple scarlatina; while in the latter, the amount of urine passed, except during the continuance of febrile symptoms, is undiminished, one of the most certain forerunners, as it is always the most invariable accompaniment of dropsy, is the excessive reduction of the quantity of urine. This urine, when further examined, is found to contain a large amount of albumen; while, under the microscope, frequently blood, not unfrequently exudation corpuscles or compound granular cells, always much epithelium, and the fibrinous casts of the renal tubes are recognised. The symptoms which accompany these changes in the urine are generally well-marked, the most prominent, save the dropsy, being a very uneasy, often severe, lumbar pain, and marked febrile excitement. But, independent of these general symptoms, it will, I think, be admitted, that the characters presented by this urine, while they differ from those of the urine in simple scarlatina, indicate also the existence of a much more serious change in the secreting mucous membrane of the kidney, than a merely desquamative one. In order, however, to arrive at a correct opinion in regard to the pathological importance of the change undergone in the kidney during the dropsical disease, it is necessary to bear in mind both the symptoms presented by the patient, and the hints afforded by the characters of the altered urine. These taken together give evidence of general febrile excitement, and of renal congestion, inflammation, and exudation. I have examined the urine in many such cases, and

have found the albuminous condition much more lasting than in the simple cases,—indeed observation and experience show now pretty plainly that the long-continued albuminuria of dropsical scarlatina, may, and often does, lead imperceptibly—insidiously it may be—to organic renal disease. In many instances I have found the albumen, though large in amount, and associated with all the general and local inflammatory symptoms alluded to, speedily and entirely disappear. I have not seen many cases of the dropsy following scarlatina, which I had watched from the commencement of the primary disease, but I have seen a few, and in all such the dropsical and aggravated symptoms appeared at the time the temporary albuminuria was going on, and were evidently the result of exposure to cold. This variety of albuminuria, then, which I have called inflammatory, may or may not be *temporary:* it is to be feared that not unfrequently neglected, or even unskilfully treated, the affection it accompanies lays the foundation of permanent renal disease. In most cases, however, it is fortunately otherwise, while in nearly all it may be looked upon as, under judicious management, a curable disorder.

[*Critical Albuminuria.*—Several trustworthy observers have noticed the frequent occurrence of albuminuria in pneumonia, and, says Dr. Begbie,]

To this albuminuria I have given the title of Critical Albuminuria, because my data being correct, and my conclusions justifiable, it is to be regarded as an evidence of a critical action, and commencement of a change undergone by a diseased part before its return to a healthy state. But I can further illustrate this subject by a reference to changes which occur in some cases of typhus fever. I have found albuminuria by no means an uncommon attendant on the convalescence from typhus; not, however, nearly so invariable in its occurrence as in scarlatina, or even so common as in pneumonia; so frequent, however, as to lead me to examine all cases in which it occurred, and that with very great care. The result has been, that no one of any such cases has, either at the time, or during a considerable period of observation afterwards, afforded the evidence of any organic change in the kidneys to account for the albumen in the urine.

The albuminuria in the case of typhus appears to me of special interest, as occurring much more frequently, if not entirely, in certain cases of typhus. It is in those cases in which we know, or have reason to suspect, that the deposits, generally called typhus deposits, have taken place in internal organs, that we find albumen in the urine. Two or three observations of a somewhat different nature have led me to this conclusion; for example, I have found the urine albuminous in cases of abdominal typhus,—that is, in those cases in which we generally find severe diarrhœa as a symptom during life, and deposit in the intestinal glands as the most prominent lesion after death. In several cases of this kind, which proved fatal, I have found albumen in the urine for days before death; and in others, which happily recovered, I have as frequently noticed its occurrence. In both those instances the albumen appeared for the most part, at an advanced period of the disease, at least after the particular symptoms had continued for some time; while in the former, the albuminuria continued up to death; in the latter, in some it disappeared as convalescence was fairly established, and in others it lasted for a longer period. The amount of albumen in these cases, and the other characters with which the coagulability was associated, were exactly as I have described them in the example of pneumonia; and finding the albuminuria to bear a relation to the deposits in internal organs in typhus, I have been led to regard the kidneys as the emunctories by which the morbid matter so deposited is to a certain extent at least removed from the system,—and so doing, to regard the temporary albuminuria of typhus as a critical albuminuria. It is, I think, no objection to this view that deposits, such as those referred to, remain in organs for a lengthened period; for, firstly, I do not think that we can pretend to limit the period of their removal or disappearance; and I am inclined to believe that, when they do so disappear, the urine will very probably contain the ingredients I have noticed; and secondly, the calceous masses found in the spleen, and other organs, accepted as the earthy remains of the deposits spoken of, certainly attest the removal by some channel or other, of the animal matter, of which, in their original condition, these deposits were partly composed. This is an interesting subject, and invites further inquiry. —*Monthly Journal of Medical Science, October*, 1852, *p.* 321.

Ague treated by Terebinthinate Liniment along the Spine.—M. Aran mentions, in the "Bulletin de Thérapeutique," that he has succeeded in staying ague fits by the use of the following liniment: Essential oil of turpentine, three ounces and a half; chloroform, about one drachm. The patient was a young man with whom quinine had failed, and the above liniment was used about two hours before the fit. The latter appeared at the usual hour, but was somewhat shorter than the preceding; the second was kept off for four hours; the third failed to appear altogether, and the patient was soon quite well, experiencing only for a few days a certain amount of discomfort at the accustomed hour of the fits. The liniment had several years ago been introduced by M. Bellencontre, laudanum being, however, used instead of the chloroform employed by M. Aran.—*Lancet, July* 31, 1852, *page* 107.

5.—On the Action of Ozone on Miasmata. By M. Schönbein.—M. Schönbein's additional researches have still further developed the analogy of this substance to chlorine, and leave no doubt of the injurious effects it may exert on the respiratory organs when in excess. Mice soon perish in an atmosphere containing 1-6000. The quantity which prevails in the atmosphere is very variable, being proportionate to the amount of electricity, and therefore at its maximum in winter, and its minimum in summer. It is, however, highly probable that, when existing only in minute quantities, it exerts a purifying effect on the atmosphere by destroying various deleterious miasmata. There are a great number of inorganic gaseous bodies, which, when diffused in scarcely appreciable quantities, yet render the air irrespirable—such as the gaseous compound of hydrogen with selenium, sulphur, phosphorus, and arsenic, gases characterised by the facility with which they become oxidized. Ozone belongs to a class of bodies which, as agents of oxidation, rapidly destroy these hydrogenous compounds. An incessant source of miasmata exists in the variety of gaseous compounds which are incessantly liberated by the decomposition of the innumerable masses of organic beings which perish on the surface of our globe. Although the composition of these is unknown, it is to be supposed that their accumulation would render the air unfit for respiration. Nature has, however, provided the means of destroying such deleterious compounds as fast as they are generated, for M. Schönbein regards ozone, which is so constantly generated under electrical influence, and is so powerful an agent of oxidation, even at ordinary temperature, as specially destined to that end. His experiments prove that air containing 1-6000 of ozone, can disinfect 540 times its volume of air produced from highly putrid meat; or that air containing 1-3,240,000 of ozone can disinfect an equal volume of air so corrupted. Such experiments show how little appreciable by weight miasmata may be, which are yet sensible to the smell, and how small is the proportion of ozone necessary for the destruction of all the miasmata produced by the putrefaction of organic matter, and diffused in the atmosphere.

We may admit that the electrical discharges which occur incessantly in different parts of the atmosphere, and determine there the formation of ozone, purify the air by ridding it of oxidizable miasmata. At the same time that these are destroyed by ozone, the organic miasmata cause its own disappearance, and prevent dangerous accumulation of it. The opinion that storms purify the air may not be without foundation, as a large quantity of ozone is then produced. In the author's experiments he has always found a large proportion of ozone in the vicinity of the stormy clouds on the Jura; and air ozonized by phosphorus for experiment, gives forth a similar smell to that perceived amidst storms in mountainous regions. It is very probable, that in certain localities the balance between the ozone and miasmata does not prevail, and disease may be the consequence. As a general rule, however, numerous experiments have shown that the air contains free ozone, (though in very different proportions,) so that no free oxidizable miasmata can there exist. M. Schönbein recommends that the atmosphere should be tested for ozone, in localities and at periods where fevers and other forms of disease prevail, so that the results of accumulated observations may be obtained.—*Arch. des Sciences.—Medico-Chirurgical Review, July*, 1852, *p.* 254.

6.—*On the Influence exerted by Chronic Diseases upon the Composition of the Blood.* By MM. Becquerel and Rodier.—The following are the conclusions of a paper recently read at the Académie des Sciences, detailing the results of MM. Becquerel and Rodier's latest hæmatological researches.—1. The majority of chronic diseases and various anti-hygienic circumstances induce an increase or diminution in the three principal elements of the blood—the globules, the fibrine, and the albumen, and this either separately or simultaneously.—2. The globules undergo diminution in the course of most chronic diseases of long duration, and especially in organic diseases of the heart, the chronic form of Bright's disease, chlorosis, marsh cachexia, hemorrhages, hemorrhoidal flux, excessive blood-letting, the last stages of tubercular disease, and the cancerous diathesis. The same result is observed in those whose food is not sufficient in quantity or reparative power, or who are exposed to insufficient aëration, humidity, darkness, &c.—3. The albumen of the serum of the blood is diminished in quantity in the third stage of heart disease, great symptomatic anæmia, the cancerous diathesis, and insufficient alimentation.—4. The fibrine is maintained at its normal proportion, and sometimes increased, in acute scorbutus. It is diminished in chronic scorbutus, as also in the scorbutic condition symptomatic of certain chronic diseases, which is most often and most markedly observed in organic diseases of the heart.—5. In all the above-mentioned circumstances, the quantity of water contained in the blood becomes very considerably increased.—6. A diminution of the proportion of globules is especially accompanied by the following phenomena: a colourless state of the skin, palpitations, dyspnœa, a *bruit de soufflet* heard at the base of the heart during its first sound, an intermittent *bruit de soufflet* in the carotids, and a continuous *bruit* in the jugulars.—7. The diminution of the proportion of albumen, even though not very considerable, when it takes place in an acute manner, rapidly gives rise to the production of dropsy, but it requires to be much more considerable when not appearing in the acute form. Considered in a general manner, dropsy is the symptomatic characteristic of a diminished proportion of the albumen of the blood.—8. A diminished proportion of fibrine is manifested by the production of cutaneous or mucous hemorrhages.—9. In anæmia symptomatic of considerable hemorrhage or insufficient alimentation, the change in the blood is characterised by a diminution of its density, an increase of the water, diminution of globules, a maintenance of the normal proportion, or sometimes a slight diminution of the albumen, and a normal proportion of fibrine.—10. In chlorosis, which is an entirely distinct affection from anæmia, there may be no changes in the blood whatever. When such are present, they consist in a diminution of the proportion of globules, an increase of that of the water, and the normal quantity or an increase of the fibrine.—11. In the acute form of Bright's disease, the fibrine continues normal, and the albumen is diminished. In the chronic form there is a diminution of globules and albumen, and sometimes of fibrine.—12. Most of the dropsies regarded as essential depend upon a diminution of the proportion of albumen; and usually originate in a material cause, consisting in a degeneration of the solid or fluid parts of the economy.—13. In diseases of the heart, the blood becomes more and more changed, as they approach the fatal termination. The changes consist in the simultaneous diminution of globules, fibrine, and albumen, and an increase of water.—14. In acute scorbutus, the principles of the blood do not undergo any appreciable modification. In the chronic form the fibrine is notably diminished, while the globules are sometimes considerably increased. In both forms, the increase of the proportion of the soda of the blood explains all the circumstances; but it has not yet been demonstrated.—15. The above modifications should influence our therapeutical management of these different morbid conditions, as each element of the blood is susceptible of special modifications. Thus, when the proportion of albumen is diminished, we prescribe cinchona, and a tonic strengthening diet. A diminution of fibrine and an increase of the soda of the blood are to be met by good diet, vegetable acids, and appropriate hygiène; and by hygienic measures and the exhibition of iron, we combat the diminution of globules.—*L'Union Médicale—Medico-Chirurgical Review, July*, 1852, *p.* 256.

7.—*Statistics of Cancer.* By JAMES PAGET, Esq.—[In a recent lecture read before the College of Surgeons, Mr. Paget stated "that persons operated upon for cancer die upon an average thirteen months sooner than those upon whom no operation is performed." This remark had reference only to cases of scirrhous cancer of the breast. [Mr. Paget says:]

I believe that the general average duration of life, after the patient's first observation of the disease, is forty-nine months; that the average life of those whose breasts are removed, and who survive the effects of the operation, is about forty-three months; and that the average life of those in whom the disease is allowed to run its course, is about fifty-five months.

In my second lecture I said that the general result of operations for medullary cancers is very different; and that, although they are so seldom long survived, that they are generally considered to be less beneficial than the operations for scirrhous cancer of the breast, yet, on the whole, they are more so. The general average length of life of persons affected with medullary cancer of the eye, testicle, breast, bones, or other external organ, may be reckoned at about twenty-four months from the first notice of the disease; but I believe the average for those from whom the primary disease is removed, and who do not die in consequence of the operation, is about thirty-four months; while the average for those in whom the disease is allowed to run its course, is scarcely more than a year.

In my third lecture, I expressed the belief that, on the whole, the removal of epithelial cancers is even more effective in prolonging life than the operation for medullary cancers; but that the wide diversities in the duration of life among those affected with this form of cancer, make it very difficult, at present, to deduce such an average as may be relied on. And I would repeat what I said in one of the lectures, respecting all these averages of life—namely, that such general results, however true, deserve only general consideration in the treatment of particular cases of cancer. They may justly determine a general rule of action, but it can be only such a rule as must admit of numerous exceptions. In many cases of scirrhous cancer there are sufficient reasons for operating; and in many cases of medullary and epithelial cancers, reasons as sufficient for refraining. The right course must, in each case, be determined by a just appreciation of all the conditions each presents.—*Lancet, June* 19, 1852, *p.* 608.

8.—*Signs of the Scrofulous Habit.* By DR. TYLER SMITH.—The author contests the general, and we believe correct opinion, that the engorgement of the lymphatic glands, seen in feeble children, is a constitutional affection. He states that in his opinion the disorder is at first local only, and does not depend on any specific constitutional taint, and therefore these enlarged glands are not to be received as evidence of a scrofulous habit. He, however, mentions one which he considers an unfailing sign of scrofula in young children. It consists of enlargement of the fingers, particularly to the first and second phalanges. The tumidity is chiefly seen over the metacarpal bones, the joint remaining of the natural size or nearly so. The swelling is soft, but not œdematous, and evidently consists of infiltration amongst the deeper structures of the finger. The surface is pale and shining, conveying the impression of semi-transparency when the tension is great. Unless in the advanced stages, there is no pain; the last phalanx is seldom affected, and the point of the finger appears by comparison smaller than usual. The seat of this curious change appears, in the first instance, to be in the periosteum, and sometimes enlargement of the finger begins a few weeks after birth. Whenever the puerile finger is morbidly enlarged in the manner described, the scrofulous constitution may be anticipated; and the author believes the tumid finger to be the earliest indication of this state presented by young children. When it is observed, the subjects of it require that every exertion should be used to remedy the general debility, of which it is the certain and unmistakeable sign.—*Lancet, May* 15.—*Provincial Med. and Surg. Journal, July* 21, 1852, *p.* 382.

9.—CASE OF HYDROPHOBIA.

By Dr. J. A. Lawrie, Professor of Surgery in the University of Glasgow, &c.

[Mr. Hislop, of Renfrew, first saw the following case, and requested Dr. Lawrie to meet him in consultation. The usual spasmodic symptoms of hydrophobia had begun to manifest themselves, the slightest impression of the air causing a renewal or an increase in the spasms. A purgative enema was administered amongst other remedies, but brought with it only a little blood, after which the paroxysms became more severe. Dr. Lawrie thus continues his account:]

I saw her about a quarter to one p.m., and was much struck with what I witnessed. On entering the bed-room, I saw a robust, fine-looking young woman in bed, seemingly under great suffering. She turned her head towards me as I entered, with a sudden movement, and I shall not soon forget her wild expression as she gazed at me for an instant, and threw herself back upon her pillow. I especially remarked the following particulars:—

(*a*) The flash of her eyes—wild, excited, half-hopeful, half-defiant—such as I had never remarked in a sane patient before.

(*b*) Her great suffering. Her constant cry was—"Oh! what I'm suffering! Oh! what suffering! What have I done that I should suffer thus?"

(*c*) *Her restlessness and strength.* She was never for one moment at rest. She moved with ease, and any attempts to restrain her movements were difficult, and required considerable effort on the part of the attendants.

(*d*) *Salivation.* A frothy saliva was constantly collecting in her mouth and between her lips. With her left hand she wiped this saliva from her lips, and rubbed it on the edge of the bedding. I particularly remarked that, when her left hand was unoccupied, she did not spit, but cleared away the saliva with her thumb and forefinger, rubbing it on the bedding, or spattering it about, regardless of where it fell. When her left hand was held, and she was not vomiting, she was unceasingly spitting, and such was the quantity discharged, that before I was many minutes beside her my hands and dress were spattered over with the white froth, which issued in profusion from her mouth.

(*e*) *Vomiting.* This was, perhaps, her most distressing symptom. It was almost constant, difficult, painful, straining. The quantity of matter discharged was not great, but was slimy, and of a "coffee grounds" appearance.

(*f*) *Thirst—desire for liquids—and power of swallowing.* She complained of urgent thirst, with burning in her mouth, throat, and stomach. She did not appear to have any dread of liquids, nor did she exhibit any horror when it was proposed that she should drink to quench her burning thirst; on the contrary, she freely discussed what would be the best for her, asked if she might have ginger beer, and showed no annoyance when her aunt tried to jest with her on the love she had shown for so vulgar a beverage as gin and water. When liquid was actually brought to her, the following circumstances were well marked:—She would not allow any one to put it into her mouth, but sat up in bed, and most reluctantly, and at last with a quick movement seized the glass. She held it for an instant with a convulsive grasp, her hand quivering and spilling a portion of its contents, and then threw (pitched) the remainder into her mouth. Having emptied it, she cast the glass from her, regardless where it fell, and convulsively clutched her throat with her hand. A rapid, violent, convulsive movement of the throat and neck followed, and the fluid was jerked out by a motion not unlike that by which it was pitched in. The attempt to swallow increased the irritation of the stomach, and she immediately threw herself across the edge of the bed, and renewed her painful straining vomiting. It was very doubtful if she *swallowed* any liquid—a convulsive closure of the pharynx seemed to arrest it, and eject it with an irresistible and powerful effort. Her existence at this time may be described as consisting of an unceasing round of tossing, complaining, salivating, vomiting, with convulsive movements in her throat, and a sense of suffocation from a never-absent, indestructible ball, to relieve which, she clutched her throat with her hands, as if she would tear out what she could not otherwise rid herself of.

(*g*) Her pulse was at least 150, regular but not strong.

(*h*) The intellectual faculties seemed unimpaired. She moved her tongue and jaw with perfect facility, and articulated quite distinctly and with great volubility.

There was no appearance of mania or furor—not the slightest disposition to hurt herself or any one near her; on the contrary, her manner to her attendants was kind. There was no peculiar sound of her voice, nothing which could at all be likened to the barking of a dog.

(i) She did not appear in the slightest degree to connect her illness with the bite of her favourite dog, or to have the least suspicion of the nature of her disease. She was early impressed with the idea that she was to die, and told her aunt that her "doctors did not know what was the matter with her, and she wished that her body might be opened after her death." This was said on Tuesday forenoon, before her medical attendants were at all alarmed as to the issue of her illness. She showed no fear of dogs. On the forenoon of the day on which she died, a terrier having come into her bed-room, her aunt ordered it to be put out. She seemed sorry when it left her, and looking after it, said, "Poor Jack."

Such, so far as I can recollect, are the principal circumstances which I remarked in this poor girl.

The vomiting of coffee-ground matter, with burning in her throat and extreme suffering, being very prominent symptoms, I confess that the suspicion immediately crossed my mind that the case was one of poisoning. I therefore gave directions that the matter ejected should be carefully preserved. I took a part of it with me to Glasgow, and gave it to Dr. R. D. Thomson, who, with great inconvenience to himself, but with that desire to oblige, and to make his high chemical attainments of use to his less qualified brethren, for which he is so much distinguished, immediately ascertained that it contained no acrid inorganic matter. I thought it necessary to communicate my suspicions to the girl's aunt, as well as to her medical attendants, and some circumstances being mentioned which rather seemed to corroborate my views and to implicate our patient, I, with their sanction, indeed at their express desire, stated them to the poor girl herself. She gave them a distinct, emphatic, and circumstantial denial, but showed no anger or irritation that I should entertain them. Her answers and her manner satisfied me on two points already adverted to—that her intellect was quite entire, and that there was a total absence of furor or mania. In a word, that the peculiar symptoms which I witnessed arose from overwhelming bodily suffering, and not from mental aberration.

I remained with her for fully two hours, during which she had two large opiate enemata, and hydrocyanic acid by the mouth. As I have already said, she did not refuse to attempt to swallow, but I doubt very much if any liquid reached her stomach. The medicine was pitched into her mouth, and the glass thrown from her hand, in the manner I have already described.

I had chloroform with me, and after the first opiate enema I proceeded to try it in the usual way. Great difficulty was experienced in getting her to inhale it. Not one instant was she at rest. Her hands being held, and her head steadied, I held the napkin before her face; but her gurgling breathing and livid countenance soon warned me that I must desist. Had I persisted, I am satisfied she would speedily have been suffocated.

I sat beside her, watching the symptoms, for an hour; and seeing that 3 ij. laudanum by enema had no effect, and that the exhibition of medicine by the mouth was hopeless, I determined to try the chloroform again. Having laid her upon her back, with her head raised and steadied, and her hands forcibly held, I kept the napkin well saturated with chloroform opposite to, but two or three inches from, her face. She was soon gently under its influence, but never to complete insensibility. The effect on the symptoms was that the vomiting completely ceased, and the restless jactitation disappeared, or was easily controlled; but she did not cease hardly for one instant to speak in the most energetic voluble strain, and the froth continued to issue in considerable quantities from her lips. Her pulse varied, but frequently fell to a little above, sometimes even below, 100. I continued to hold the napkin and watch the effect of the chloroform for about an hour, and having satisfied myself that, whatever the ultimate result might be, the inhalation was alleviating her sufferings, I left her, suggesting to Dr. R. and Mr. H. the propriety of continuing the chloroform as long as they thought they could do so with safety. I returned in the evening, and found that shortly before my arrival she had been relieved by death from her terrible sufferings. Mr. Hislop informed me that the chloroform had been continued with great relief till about half-past four o'clock,

when the vomiting and spasms returned, and the pulse became so feeble that it was deemed prudent to omit it. The difficulty of swallowing continued to the last. "About twenty minutes before her death," says Mr. Hislop, "she complained of thirst, and I offered her a glass of gin and water. On taking it in her hand she became violently agitated, and in attempting to carry it to her mouth spilt it on herself and her attendants. She said it was the gin which prevented her swallowing, and I gave her pure water. The result was the same, and I do not think she swallowed a drop of the fluid. She sank rapidly from five o'clock, and died rather suddenly at seven, in a violent spasm, which seemed to suffocate her in an instant."

To complete the narrative of this interesting case, I must turn as briefly as possible to its history previous to the 7th June. Mrs. W., the aunt of the patient, had a large dog of the St. Bernard's breed. By all accounts it was a remarkably fine animal, on which she set so high a value that she had refused £20 for it. It was particularly attached to the unfortunate subject of this case, and seemed to take pride in being her attendant and protector. About the 1st of March it became suddenly ill, and a gamekeeper in the neighbourhood pronounced it to be affected with severe inflammation, the consequence of poison maliciously administered to it. He bled it, and directed it to be put into the coach-house, loose, and to be fed upon warm gruel. Immediately before going to bed on the night of the 1st March, Mrs. W. placed a basin of gruel before the dog, and set another at the side of the fire to be ready for it in the morning. About six o'clock she called her niece, and asked her to see how "Neptune" was, and to take him his gruel. The poor girl got out of bed, threw a light shawl loosely over her shoulders, and did as her aunt had desired her. When she was leaving the coach-house the dog endeavoured to rush past her and escape, whereupon she closed the door, shutting herself in with her back towards the dog. He instantly sprang upon her, seized her by the left shoulder-blade, sank his tusks into her back, and bit or scratched her on her face. Her aunt, when speaking of this attack, endeavoured to make light of it, but one of the servants assured me that the infuriated dog was "worrying" the poor girl, and that she might have been killed had some one not promptly come to her assistance. When the door was opened the dog made his escape, remained away the greater part of the day, and returned in the afternoon of his own accord. He was again shut up in the coach-house, and became quite furious,—tearing the door, and every piece of wood he could get hold of. He was so bad, that a veterinary surgeon, who was asked to see him, was with difficulty permitted to open the door; and what food and medicine he got subsequently was pushed under it. He died the following morning. No suspicion was entertained of his being rabid. On the contrary, so firmly was Mrs. W. persuaded that he had been poisoned, that she urged the public prosecutor to take up the case, and had the body sent to Dr. Mackinlay, in Paisley, for examination. This latter step was not taken till the 8th March, by which time the carcase was putrid: and having been previously cut up by a gamekeeper, admitted of a very imperfect examination. The stomach was examined by Dr. Mackinlay, jun., who kindly informs me that he could discover no poison. Mrs. W. publicly offered a reward of £5 to any one who would assist in discovering the person who administered the supposed poison. No information appeared.

The above statement can hardly leave a doubt as to this animal having died furiously rabid.

Remarks.—The first question which suggests itself in this, and all similar cases, is, "Was this really hydrophobia?" Now, it does appear to me, that if we are to admit the existence of hydrophobia as a specific disease, we cannot refuse our assent to this being an example of it. The history of the dog, the history of the girl, the peculiarity of the symptoms, and their rapidly fatal termination, appear to me to be as clearly traced, and as well marked, as we could possibly desire. The diagnosis of hydrophobia ought not to be difficult. I have heard experienced surgeons assert, that it so much resembles tetanus that they are in reality the same disease. It has been my misfortune to see too many cases of tetanus, and only this one case of hydrophobia: but symptoms more dissimilar than those of traumatic tetanus, and the sufferings endured by this unfortunate girl, I have never witnessed. It much more resembles acute hysteria. The globus and incessant tossing were well marked; but, although the desire to move was irresistible, the

motions had no appearance of being involuntary, or associated with insensibility. The attempts at swallowing brought out symptoms such as I had never before seen, and which appeared to me quite diagnostic between this and any other form of disease. The constant discharge of froth from the mouth was also a very peculiar symptom. My first impression was, that the girl was poisoned. The same suspicion has been strongly entertained regarding the dog. I have only seen one case of pertinaciously concealed suicide from arsenic. In it the symptoms closely resembled those of cholera, and were mistaken for that disease. There was no difficulty of swallowing; the cramps were most overpowering; the vomiting and purging profuse; and the "natural characters" of the case very different from those of Miss M. Still I think hydrophobia deserves the careful study of the medical jurists.

The prophylaxis in this case was very imperfect. Mrs. W. sucked the wounds on her niece's back with her mouth, carefully washed them, and dressed them with simple domestic remedies. Nothing else was done, and they healed readily.

Period of incubation was about ninety-eight days, certainly beyond the average.

Predisposition and Predisposing Causes.—The girl's temperament was ardent and excitable, with a full share of self-will. In January she was engaged to be married to a youth, who took the small-pox and died. She persisted, in spite of all remonstrance, in attending upon him, and there is some reason to believe that she took the disease in a very modified form. In a few months after her first lover's death, she was engaged to be married to a second. Her aunt disapproved of the marriage, and for some time keenly opposed it, but was constrained to give her consent a short time before the symptoms of hydrophobia appeared. Powerful mental emotions very frequently precede the first threatenings of hydrophobia, and this case adds one to the number which make it probable that they may act as predisposing causes. Fear had no share in it. The girl had no suspicion of the nature of her illness, and no dread of dogs.

The stage of *recrudescence*, as it is somewhat barbarously called, was altogether absent in this case. She was not heard to complain of her shoulder or face, and Dr. Aitken's accurate report shows that the cicatrices were perfectly normal.

Morbid Anatomy and Pathology.—The appearances discovered by Dr. Aitken's careful examination confirm the opinion, that congestion and extravasation of blood connected with the spinal cord and mucous and sub-mucous tissues, with prominence of the mucous papillæ, constitute the principal morbid appearances hitherto discovered in hydrophobia. It seems highly probable that these are effects, not causes, of the disease, or if causes, are but fragments of the efficient cause. What that cause is, or how it acts, is still a mystery. That it is a morbid poison I have myself no doubt. That it may remain in the system for an indefinite period, and then be thrown off, or be brought into play by secondary causes, seems highly probable. I am not disposed to assign any limit to the period of incubation. The poison of syphilis may lurk in the system undeveloped for years; and why not that of hydrophobia?

Treatment.—The nature of the disease not being suspected until the symptoms were fully developed, the treatment was more directed to meet symptoms than to arrest so fatal a malady as hydrophobia. Still it was sufficiently active, and conducted on unobjectionable general principles. I was anxious to give sedatives and chloroform, especially the latter, a fair trial. Great caution is necessary in using anæsthetics in this disease. If carried so far as to prevent expectoration, the copious secretion of frothy saliva is almost certain to suffocate. As exhibited in this case, chloroform gave great relief; but as a curative it was powerless. I have tried it freely in tetanus with the same effect. It diminishes pain, but cannot cure; indeed, I fear its tendency is rather to shorten than prolong life. After my experience in this case, I should consider all attempts to treat hydrophobia by medicines, given by the mouth, as worse than useless. If we look upon the disease as a morbid poison, acting in an unknown manner on the nervous system, our indications will be to allay the consequent irritation, and fight against death with the hope that the poison may exhaust itself before life is extinguished. In this view, strong soup, wine and brandy, given by the rectum, with free doses of sedatives exhibited in the same manner, would constitute the most rational treatment. We must not despair of discovering some medicine (possibly some well known

medicine applied in a novel manner, as ether by inhalation), which will prevent death until the disease exhaust itself. Perhaps anæsthetics, *early* begun, before the stage of acute spasm and exhaustion have set in, may be of use. All treatment whose effect is to diminish strength, should be discarded.

Frequency of the disease.—Until within the last three years, hydrophobia was certainly a rare disease in Scotland. In 1849, a case occurred at Dalkeith, and no fewer than three perfectly authenticated cases are recorded in the 'Monthly Journal' as having occurred in the east of Scotland in 1850. When lecturing on this disease during last session, and adverting to these cases, I stated that, so far as I knew, no unequivocal case had been seen in Glasgow or its neighbourhood for at least a quarter of a century, but that, in all probability, twelve months would not pass and leave us in the same boasted immunity. It is remarkable that about the very time that I made that statement the seeds of the disease were being implanted in our unfortunate patient; and it is not much less so, that I should have been called upon to assist in its treatment.—*Monthly Journal of Med. Science, Sept. 1852, p. 233.*

10.—*Case of Hydrophobia in the South of France.* By M. GUYON, of Valence.—M. Guyon has communicated to the Société d'Emulation of Paris, the report of a case of hydrophobia, drawn up in a very graphic manner, and presenting some points of interest. The patient was a nailer, about thirty years of age, who was bitten by a little dog, which he had never seen before, and which was quarrelling with his own. No signs of disease were noticed in the strange dog; it was seen for several hours afterwards to play about, gnaw bones, &c., and was subsequently lost sight of.

The medical man who was called in wished to cauterize the three small wounds with the hot iron, but the patient refused, and his surgeon readily yielded, as the dog was supposed to be healthy. Forty days (the period vulgarly believed necessary for incubation) passed away, and the patient now exclaimed that he had been more afraid than hurt, for he had felt uneasy in his mind ever since the accident. About a fortnight after this, the man began to give signs of peevishness, and became quarrelsome and abusive. He soon complained of pain in the vicinity of the pharynx, difficulty of swallowing came on, and the fits of dyspnœa, when water was placed in the mouth, were dreadful.

The surgeon in attendance noticed that the papillæ at the base of the tongue were much enlarged, that the epiglottis became quite erect, and resembled in shape and colour a small cherry. Every time that he succeeded in lowering it, the respiration became easier. There was no horror of water, but a difficulty of swallowing it, the fauces, larynx, and pharynx being highly injected. The spasmodic fits succeeded each other with fearful rapidity, the cellular tissue of the neck and chest became emphysematous, and the patient died asphyxiated the day after the attack.

No post-mortem examination was allowed, but the larynx and posterior portion of the tongue were taken out; they did not present any distinct alterations. M. Guyon appends to the case the following remarks:—

1st. It is clear, judging from the case just related, that a dog can communicate the disease whilst the latter is yet latent; and if it be the salivary secretion which conveys the virus, it does not seem necessary that the animal have a great abundance of it, and foam at the mouth, for the fluid to be contagious, as is vulgarly supposed. 2nd. It has been imagined that fear and apprehension have much influence on the development of hydrophobia; but this case shows that the disease may manifest itself more than a fortnight *after* every sort of apprehension has passed away. 3rd. The peculiar rising and stiffening of the epiglottis noticed in this case, has not been observed before, and would sufficiently explain the laryngeal spasms, which eventually brought on asphyxia. The phenomena of hydrophobia might thus be accounted for, without having recourse to a lesion of the nervous centres, which lesion has, in fact, never been demonstrated by autopsy. 4th. The emphysema of the neck and chest was probably due to the rupture of some pulmonary vesicles during the violent spasms which the patient had experienced. This circumstance shows very clearly that there must be direct communication

between the general subcutaneous cellular tissue and the submucous areolar texture of the lungs. 5th. The hypertrophied papillæ at the base of the tongue, which were seen very early in the course of the disease, would explain the sense of pharyngeal constriction of which the patient complained at the very outset. Thus it would finally appear that it is principally in the pharynx and larynx that hydrophobia becomes localised, although it is likely that the disease arises from a virulent infection of the whole organism.—*Lancet, May* 29, 1852, *p.* 521.

DISEASES OF THE NERVOUS SYSTEM.

11.—CASE OF CHOREA TREATED BY CHLOROFORM.

From Dr. Banks's Clinical Reports.

[The subject of this case was a young gentleman aged twelve, healthy, and of perfectly healthy parents. About three months previous to the attack, he received a severe wrench in the back. Gradually symptoms of chorea manifested themselves. These slowly increased, until the muscles of the entire body seemed to be under the influence of the disease.]

The disease now attained its acme of intensity. To restrain the boy, it became necessary to have four persons, who were from time to time relieved by fresh relays. So violent were the spasmodic movements, that even four strong assistants failed in their attempts to hold him down; and on one occasion he was dashed against his brother with such force as to prostrate him. The little patient now rarely slept, and never for more than half an hour. For four days and nights there was scarcely any intermission.

The skin of his back and wrists was abraded from the attempts to restrain his movements. It is unnecessary to detail *seriatim* the treatment which had been employed; suffice it to say that remedial measures suggested by the experience of their success in numerous cases, had been fairly put to the test, and the disease nevertheless progressed, not being in the least degree influenced by the means adopted. Opium, so potent an agent in similar cases, received the most full and complete trial, carried to the utmost extent compatible with safety; it failed to induce sleep. Under these circumstances Sir Henry Marsh came to the conclusion that the case was one in which chloroform might be administered; he requested my attendance, and in consultation with Mr. Cusack, it was determined to try the effects of chloroform as a "*dernier ressort*." In the presence of Sir Henry Marsh and Mr. Cusack I proceeded to bring the patient under the influence of this anæsthetic agent. About half a drachm of chloroform was poured upon a pocket-handkerchief and held near the nose and mouth; after inhaling nearly two drachms in this manner, the muscular movements had altogether ceased, the right hand being the last part of the body which was reduced to a state of repose. The inhalation of the chloroform was not followed by sleep. After remaining motionless for some time the body became again agitated, but the movements were much less violent and abrupt. On the night after the exhibition of the chloroform, the boy slept for at least five hours, not, however, without frequently awaking. The following day it was found that two persons were without difficulty able to restrain him. The chloroform was given as on the day before, and again he was reduced to a state of complete quietude. A good night's rest followed, but next day he was nearly as unquiet as ever. If he was released for a moment he seemed unhappy, and evidently wished to be restrained. For two nights after there was scarcely any sleep. Chloroform inhalation was again applied and persisted in until profound, but calm and apparently natural, sleep was produced, neither lividity of the surface nor stertorous breathing being the consequence. The sleep continued for some hours, and on the following day there was a manifest improvement in all respects. The expression of the countenance was placid and composed; the movements of the limbs continued, but they were not abrupt and violent as they had been; food could now with facility be introduced into the mouth,—up to this time there was great difficulty experienced in feeding him; drink could only be given by means of a sponge, and at intervals small portions of jelly were thrust

into his mouth; for the first time for many nights he slept without the aid of chloroform; two grains of sulphate of quina were ordered to be taken every three hours; the legs were now rarely in motion; he could eat, and drink, and speak a little; hitherto, even after there was a decided improvement, he could only speak by monosyllables, and even these were violently jerked out. Such was the condition of the patient on the seventh day from the first exhibition of the chloroform. The improvement from this period was progressive; he gradually acquired the power of feeding himself, and he was soon able to walk about his bed-room. The only involuntary movements which continued were confined to the fingers.

He persisted in the use of sulphate of quina, and after a short time he was sent to the country. The only trace of the disease which remained when he left town soon disappeared, and he now writes to his family that he is "quite well."—*Dublin Quarterly Journal, Aug.* 1852, *p.* 93.

[The best method of introducing the chloroform is by pouring a little of the fluid on a pocket-handkerchief, and bringing it near the nose and mouth, allowing free admixture of atmospheric air.]

12.—CASES OF CHOREA.

By Dr. R. B. Todd, F.R.S., &c.

[In the first case related by Dr. Todd, the patient, a boy of 9 years of age, had been quite well until ten weeks before admission into the hospital, when he had been seized with rheumatic fever, which, although relieved by remedies, appeared to terminate ultimately in a sudden attack of choreic symptoms.]

Among the early symptoms which manifested themselves in this way was difficulty of deglutition, which came on and continued for some days prior to the more common and characteristic symptoms. The dysphagia was due partly to a want of full controlling power over the tongue, and partly to a want of due harmony in the action of the pharyngeal muscles. This symptom is peculiarly interesting, from the marked connexion which subsists between this malady and emotional excitement, and deserves special attention in connexion with the pathology of this disease. Previous to his admission he could not walk or help himself in any way, and he was obliged to be washed and dressed by others.

On admission, he was unable to stand for any time without being supported; and if he attempted to walk or run, his limbs would be forcibly jerked about in various directions, and he would fall if not upheld. When in bed his arms and legs would be in constant restless motion, being thrust first to one side and then to the other, with an irregular jactitating movement.

His articulation was very imperfect, and if he attempted to speak he could only utter a few scarcely intelligible words in a whisper. The dysphagia, although much better, was still present.

When he was told to put out his tongue, it was protruded with the sudden thrust so characteristic of chorea, a feature of the disease which you will remember I have often called your attention to as one of its most constant and characteristic symptoms. The whole organ is forcibly and suddenly protruded from the mouth, appearing as if thrust between the teeth, and is retracted sometimes in an equally sudden manner, sometimes more slowly, and as if supported and guided by the teeth. There is also an awkwardness in all the movements, which extends even to the muscles of the face, and, as I said before, all the movements have an exaggerated character. These phenomena are due to a want of power of duly co-ordinating the various voluntary movements of the body, and doubtless depend upon some affection of that portion of the nervous centres in which the co-ordinating faculty is situated.

Another character of these irregular movements, and one which is usually present, although not well marked here, is that they are more evident on one side of the body than on the other; and you will find this feature present in some of the other cases which I shall presently relate to you. Chorea is strictly a one-sided disease, that is, it affects one side more than the other; sometimes one side only is affected; hence it may be classed with cerebral affections, in which the morbid state of one side of the brain will extend to the opposite side of the body. It very

rarely happens, even though the irregular movements are observed on both sides, that we cannot detect more movement on one side than the other. The present case, however, seems to be an exception,—it is one of general chorea, and all the limbs seem equally disturbed in their movements.

What is especially interesting in the boy May, is the occurrence of the disease as a sequence of rheumatic fever: the case, too, affords a good example of the heart disease which is so often associated with chorea, and which, in this instance, is clearly dependent upon the rheumatic attack. Upon listening to the chest, I easily detected a bellows-sound, which was most distinct at the apex, and became less so as you receded towards the base of the heart; this bellows-sound was synchronous with the systole, which, associated with its situation, showed that it depended upon imperfection of the mitral valve, so as to allow of regurgitation of the blood into the auricle at each contraction of the ventricle; it was also audible at the back, below the left scapula. The imperfection was probably the result of endocarditis affecting the mitral valve and the chordæ tendineæ, creating more or less of shortening of the margins of the valves and contraction of the chordæ, so as to prevent the perfect apposition of the valves, and, therefore, the complete closure of the auriculo-ventricular opening.

This boy, it appears, was taken ill with symptoms of chorea on May the 8th; he was, therefore, suffering from the malady for upwards of a fortnight before his admission into the hospital. The treatment to which he has been subjected is sufficiently simple; it consists merely of splashing with cold water every morning, and, at the same time, feeding him well. The splashing is effected by throwing one or more pailfuls of water over the patient while he is standing in a large tub. This is a plan of treatment which we have followed in several cases which have been in the hospital within the last few months; and the result of it is, that the boy has much improved in general nutrition, the irregularity of the movements has much diminished, and, at the present time, he is able to walk without assistance,—a result not more favourable than that which attends its adoption in most cases. The bellows-sound, of course, remains, and probably will remain during the boy's life, for the sound depends upon organic imperfection of the valves, and must necessarily be present so long as that imperfection exists.

Another point in the history of this boy, to which I have not yet referred, is, that there is a tendency in his family to rheumatic complaints; for we find from the history, that his elder brother, aged 14, also had an attack of rheumatic fever about a year ago.

A day or two before the symptoms appeared, this boy was much frightened by his sister, who had covered herself with a white sheet, and appeared before him unexpectedly while he was in bed. There is here, then, that which we so frequently—indeed, I might say, so constantly—observe, namely, the connexion of sudden fright with the origin of these cases. In this case, the fright preceded the symptoms by a day or two; but, in some other of the cases to which I shall have to direct your attention, a much longer interval occurred between the fright and the manifestation of the symptoms. Although a certain diathesis seems to be always present in cases of chorea, the disease seldom occurs without some sudden and emotional excitement, such as fright.

Case 2.—The next case is that of Sophia Jackson, who was in Lonsdale Ward: she is one of two sisters, both of whom have suffered from chorea. She had always enjoyed good health, with the exception of the occurrence of an attack of rheumatic fever when she was 2½ years of age. About a week before her admission, it was noticed that her hands became fidgety, and this was especially the case with the right hand. In this case, the one-sided character of the disease is well illustrated, for the irregular movements are almost confined to the right half of the body.

Here, also, we have fright in the history, for we find that, about three weeks before the appearance of the symptoms, she was met and accosted by a drunken man, and was very much frightened at the time; but you will observe that, in this case, so long an interval as three weeks elapsed between the occurrence of the fright and the manifestation of the characteristic symptoms. Although this interval seems very long, I think we may fairly refer the excitement of the disease to this

cause, for, in many instances, you will find that as long or even longer intervals of time have elapsed between the occurrence of the fright and the accession of the malady; and it is very rare indeed, to meet with a case in which you may not find, on investigating the history, that there has been a fright from some cause or another. I have known the fright occur six weeks before the chorea manifested itself, and I have not the slightest doubt that that fright excited the disease.

The mobility of the right upper extremity continued to increase in our patient, and soon the power of walking became obviously impaired. The peculiar thrust of the tongue was also developed; and, upon examining the heart soon after her admission, we detected a bellows-sound over the base of the organ, and in the course of the large arteries. This was most probably due to the anæmic state of the patient, and, therefore, in this point differed materially from the bellows-sound present in the first case, for this anæmic-murmur disappeared as soon as the patient recovered. In this case we noticed a very remarkable feature of not unfrequent occurrence, namely, that the urine was of very high specific gravity, and generally contained a deposit of pale lithates, and an excess of urea was found in it several times. The high density of the urine was most marked when the choreic movements were most active, and it was probably due to the increased waste of tissue consequent on the disturbed state of the muscles and nerves.

This patient was ordered an affusion of cold water every morning, and was kept upon a good nutritious diet. The urine was carefully examined from day to day, and seldom fell below 1019, and frequently reached 1030, and once was found to be as high as 1035. As the patient improved in health, the urine fell in specific gravity, but was never found below 1016. Lithate of ammonia was nearly always present, and oxalate of lime was frequently found mixed with it.

It is easier to say what chorea is not, than to describe what its essential nature is. We may regard it as a disease dependent on a debilitated state of the system, which does not in any way arise from an inflammatory or hyperæmic state of any part of the great nervous centres or of other organs. Indeed it is impossible to fix upon any particular organ of the body in which anything like structural lesion exists in cases of chorea. The disease is one of functional disturbance rather than of organic change, and this is borne out by the results of *post-mortem* examination; for almost without exception we fail to detect, in those cases of chorea which terminate fatally, any morbid alteration in the various organs which could give rise to the phenomena, and in the vast majority of cases we find all the viscera in a perfectly healthy condition, at least so far as we are enabled to make out with the means at present at our disposal.

The structures which are obviously affected in chorea are the nerves and muscles. Doubtless a morbid state of both exists; but it seems most probable that the disturbed state of the muscles is excited and maintained by a deranged state of the nerves and nervous centres. If I were to refer to any particular part of the brain, as more particularly the seat of that disturbance which gives rise to the development of the peculiar phenomena of chorea, it would be to that which may be regarded as the centre of emotion. The remarkable frequency with which the attack of chorea is traceable to fright, as its cause, points clearly to this part of the brain, (which has the most extensive connexion with, and influence over, other parts of the nervous system,) as the *primum movens* in the production of choreic convulsions. The chain of phenomena would then be as follows: first, a peculiar diathesis; then a more or less enfeebled nutrition; and, thirdly, a strong mental emotion, which disturbs the centre of emotion, and, through it, deranges the action of more or less of the nervous system and a corresponding portion of the muscular system.

And now as to the treatment. You will readily admit that it is not a little important to have it impressed on the mind of the practitioner, *in limine*, that he has not to combat any inflammatory, or hypersthenic, or disorganizing process. He has simply to improve the condition of the blood, to amend general nutrition, to calm the nervous system, and to infuse tone into the muscular. Of course, if any source of irritation exist it must be removed, such as a deranged state of bowels or worms in the intestinal canal. These causes of irritation, however, exist much less frequently than is generally supposed. Nevertheless they deserve early and close attention; but a system of purgation carried on too long may prove highly

pernicious. If worms exist let them be expelled if possible, whether they be regarded as cause, or simply as concomitant. The most common of these are the ascarides, which have their habitat in the rectum, and which may be expelled by enemata of a strong solution of salt in water, or an infusion of quassia.

Attention to the fulfilment of these indications is all that is essential to the cure of the vast majority of the cases of chorea which come before us in practice. But you will find great advantage, in most instances, from the free use of cold water by affusion to the surface of the body. I have treated many cases most successfully, simply by attention to diet and by cold affusion, practised once, twice, or thrice a day, and without the use of drugs of any kind. You will remember that this practice was followed very speedily by marked benefit, in one of the cases which I have detailed to you to-day. The girl had been under tonic treatment for two months prior to her admission, with but little benefit; but on the fourth day of the use of the cold affusion there was a very marked improvement in both the frequency and the violence of the movements; and it was evident that the affusion exercised a decidedly calmative influence upon the nervous system.

Sometimes, however, you will find yourselves baulked in the use of this valuable curative agent, in the case of an irritable, or excitable, or ill-tempered child, or of a nervous, fidgety mother, or a prejudiced nurse. When you have to contend with these difficulties you must be guided by circumstances, either in giving up the resource or in gradually leading the patient to the full use of it.

I wish to impress upon you that it is to such hygienic treatment as I have described that we must look mainly for the cure of chorea. But there can be no doubt that much good may be obtained from the simultaneous and careful employment of drugs of the tonic class. Of these the metallic tonics rank first, especially iron and zinc, or quinine, or some form of bark, of which you will find the liquor cinchonæ of Mr. Battley one of the most useful preparations.

There are certain after-effects of chorea sometimes met with, which you should remember, and be prepared to treat. A child may be brought to you with one side completely paralysed, or with palsy of a limb, and, upon questioning the friends, you will find that the child has been left in this condition after an attack of chorea. Occasionally, this paralytic state occurs as a precursor to the choreic attack, but this is rare. What are you to do in such a state? Does this condition indicate the occurrence of any important lesion? In my experience certainly not, and most of the cases get well in a short time. You should persist in the tonic plan of treatment, and endeavour to improve the health as soon as possible. If, however, the paralysed state should last for any time, it is important to use some means to exercise the paralysed muscles, otherwise they would suffer in nutrition, and a permanently weakened state of the muscles would result. For this purpose, nothing is better than the careful use of galvanism. A gentle and slowly-interrupted current from the battery may be daily transmitted through the paralysed limb or limbs, for a quarter of an hour or twenty minutes at a time; and the limbs may be frequently rubbed with the hands, or with a coarse towel or a flesh-brush.

The prognosis of chorea may almost always be favourable, save in those terrible acute and general cases which, by the violence of their movements, rapidly exhaust the powers of life. But, even with such cases as these, we shall be more successful when we can succeed in divesting ourselves of the notion that such symptoms can only arise from a hyperesthenic or inflammatory state. I may here mention, by the way, that the cold affusion, well managed, and repeatedly applied at short intervals, has great influence in controlling the convulsions in these cases of general chorea.

It is not easy to answer a question which is often asked, especially in private practice,—namely, as to the probable duration of a choreic attack. Generally speaking, the restoration to health, in such cases, is a slow and tedious process; and I think, you will find it more so in private life than in hospital practice, because we cannot subject our patients to the same discipline when they are exposed to the excitements and indulgences of home life, as when under the surveillance and directions of strangers in a well-regulated public establishment. It is a very mild case of chorea that will recover in three or four weeks; more frequently they require double that time,—often two or three months, or even five months.—*Med. Times and Gazette, July* 24, 1852, *p.* 79.

13.—ON CHOREA.

By Dr. Meam.

Ammonio-sulphate of copper I regard as the sovereign remedy of chorea. In the records of the Children's Hospital at Pesth, there are 177 cases treated with this substance, 170 of which have been restored to perfect health in the average time of twenty-two days, (the shortest, I think, about a fortnight, the longest, forty-five days.) The others were cases of the worst kind.

I have seen, in many instances, the complication with chlorosis anæmia. In this latter case we may properly add to the mixture of ammonio-sulphate of copper, (as I will soon bring it before you,) a proportion of the æthereal tincture of iron previously mentioned.—℞. Aquæ menth. pip. oz. iv.; ammonio-sulph. cupri, gr. viii.; tinct. opii simpl. gtt. viii.—xii.; syr. simpl., oz., ss. M.

In this way it will be possible to administer large doses of the remedy, which, otherwise easily cause nausea, vomiting, gastric or intestinal pains, and diarrhœa. The tolerance of it, however, being very different, I almost always commence with one tea-spoonful as a single dose, four or six times a day, and increase the quantity gradually, as far as the idiosyncrasy allows it. Many children, from about nine to fourteen years old, could take of this mixture one table-spoonful four or five times a day, or about four to six grains of it, and continue this during some weeks, whilst in powder, we scarcely succeed with more than half a grain per dose. When sickness is produced, we cease with it for one day, and then lessen a little the doses.

Iodine is a remedy which, I believe, we may justly call *anti-dyscrasic*, viz., which has the effect of promoting directly the depuration of the organic liquids from some dyscrasic elements. I am far from saying it is a general anti-dyscrasic, nor can I approve of the name of anti-scrofulous, as applied to it, scrofulous "being still a very vague," not to say superficial expression. But I can state the fact, that I have seen *improve*, under its use, *in a proportionally short time*, some hundreds of cases with different complaints, which we usually call scrofulous, and above all, those characterized by impetiginous or eczemato-impetiginous eruptions over the skin, the improvement or cure having been effected in the wards of the Children's Hospital, *without the influence of change of air or baths*, the usual assistants of antimonial and other remedies, regarded as anti-scrofulous, but which, in the hospital at Pesth, without those assistants, did clearly appear inefficacious. I beg to state, that if remedies would be subjected to similar trials in large hospitals, as we perform them in Pesth, with iodine and some other substances, by and by, the number of pharmacological fallacies would become reduced. If any one should ask me, in what manner iodine acts as anti-dyscrasic, I am not perfectly sure how to answer. It acts, evidently, in a stimulant way upon the mucous membranes, the kidneys, and upon the liver. The latter action has not been *duly* noticed, though I can assure you that almost all bilious, or what they call hepatic constitutions, are most disagreeably affected even by small doses of iodine, so that these temperaments are seldom allowed to pass even through a mild course of iodide of potassium. Dyspepsy, or bilious vomiting, is a frequent effect, but I never observed bilious diarrhœa. The most obvious effect of it, however, is to produce irritation in the mucous membrane of the eyes and the nose; connected, in higher degrees, with fever and headache; it acts decidedly upon the urinary apparatus, commonly increasing the secretion of urine, by which more or less of it is again carried out of the body. Its action upon the skin is the latest, and appears as consecutive to its stimulant action upon the mucous membranes. Iodine fever resembles catarrhal fever, and is frequently followed by perspiration. Salivation, and some other effects of it, are less constant and important.

In some individuals, but very seldom in young children, we have observed a slight diminution of the testes; in some ladies the glandula mammaria have been diminished. These effects will sooner happen under long continued small doses than under large ones, when they will excite febrile reaction.

I have observed that the more there was of iodine fever, with consequent crisis, the more evident was the anti-dyscrasic effect of this remedy.

In the clinical case-book of the Children's Hospital at Pesth, there is a considerable number of different affections of bones, of one year's standing or more, in

scrofulo-impetiginous children, which, under the phenomena of iodine reaction, have been cured in the short time of one to three months.

After all that I have seen, it seems to me that *the anti-dyscrasic action of iodine is not a directly chemical one, like that of iron in chlorosis, but appears to depend upon producing a sort of disturbance, the reaction upon which is followed by the curative effect.* From this it seems to follow that, whilst in chlorosis we must give iron in frequently repeated small doses, iodine must be administered in the opposite way. Many cases, however, may be improved or cured without fever. Fever has also its minimum in the body, which is scarcely perceptible.

From the above statements it results that iodine, in order to become a strong curative power, requires a constitution fit for its reception and reaction upon it. Now full, phlegmatic, or lymphatic constitutions bear it the best, the nervous less, the bilious least of all. Atrophy and anæmia must be removed before we commence with iodine. And when we consider that atrophy is the most direct indication for cod-liver oil, and the most direct counter-irritation for iodine, it becomes clear that these remedies act in an opposite way, and that cod-liver oil owes not its effects to its infinitesimal part of iodine.

Now, I should feel very glad were I able to point out to you and describe more exactly the cases in which you may expect advantages from iodine. But, without having before us the patients, it is scarcely possible to give you exact directions.

Comparatively full phlegmatic constitutions, affected with eczema-impetiginosum, or even with caries, supported, in general, the strongest iodine treatment, and had the best results of it. This is one of the best results we had in the Children's Hospital with that remedy. On the contrary, prurigo, impetigo, achor, lupus, scrofulous or tuberculous infiltration of the glands, do not yield to the iodine treatment. Catarrho-scrofulous conjunctivitis also excludes the use of iodine, because under its action the inflammatory character of this affection almost constantly increases long before an anti-dyscrasic effect could be obtained. On the contrary, I frequently succeeded with it in torpid forms of swelling of the meibomian glands.

If a dyscrasic local affection, which we think proper to be successfully treated with iodine, does occur in an emaciated child, we must, before its use, improve the constitution with cod-liver oil; if the subject is anæmic a course of iron must precede. In children of a nervous temperament, or where we encounter a great disposition to catarrhal irritation of the intestines, we assist the iodine treatment with opium or Dover's powders.—*Provincial Med. and Surgical Journal, May* 26, 1852, *p.* 257.

14.—ON STAMMERING.

By Professor Dunglison. (Reported by Dr. J. Aitken Meigs.)

[In stammering, the consonants, especially those known as explosives—as *b*, *d*, *t*, *g*, *k*, &c., are most difficult to pronounce, in consequence of their being dependent upon an ever-varying disposition and arrangement of the vocal tube. Professor Dunglison, in his clinical lecture, remarks:]

Much difference of sentiment has existed in regard to the essential cause of stammering; and views have occasionally been entertained, which are certainly far from tenable. By some of the best physiologists, all the varieties have been referred to a spasmodic closure of the glottis producing a sudden arrestation of the issuing column of air. That this is not always the cause of the affection, however, is shown, as we shall see, by the cases before us. The great fault lies in the spasmodic action of certain of the muscles concerned in the production of the voice, and in articulation. Often, as in chorea, or St. Vitus's dance, the slightest agitation serves to aggravate, in the most painful degree, the abnormal action. Indeed, the infection may not improperly be—as it has been—called, "Chorea" or "St. Vitus's dance" of the voice. The stammerer, on attempting to enunciate a word or syllable, experiences difficulty or resistance at the commencement, and having but an imperfect control over the voluntary muscles of the vocal apparatus, he at once loses all confidence in his ability to produce the sound required, and there consequently results an irregular or spasmodic action of those muscles, which, for a

longer or shorter period and determined by the degree of spasm, effectually prevents enunciation. In the case of the explosive consonants, the total interruption of the breath, and the badly regulated and insufficient volition, give occasion to the most painful spasmodic efforts on the part of the muscles more immediately concerned in articulation. This may even be extended to the whole body, which is thrown into a most distressing state of agitation to overcome the obstacle. At length the spasm ceases with the accomplishment of the act of expiration. It will now, therefore, be understood, why the complete interruption to expiration in the enunciation of the explosive consonants should be the most common phenomenon observed in stammerers. In the case, however, of the continuous consonants, an additional phenomenon occurs, in the sound being prolonged by spastic action for a much longer time than necessary.

Mr. Bates, who is an ingenious and liberal mechanic, has been studying for some time, the nature and treatment of these distressing impediments to speech, and, as I remarked, has been kind enough to bring here several of the persons under his care, that you may see me examine them, and hear me explain the mechanical contrivances which he employs to obviate them. He was himself, for a long time, a most intense sufferer, and, in consequence, had his attention earnestly and assiduously directed to the discovery of some means of relief. He has overcome the difficulty to himself, and has happily succeeded in enabling others to do the same. In the three cases now before you, and which are at present under his guidance, the spasm manifestly affects different muscles; and hence, although in each person the same amount of difficulty is perhaps experienced in enunciation, the difficulty may concern different sets of letters. Thus the resistance may more prominently affect the labials, dento-labials, linguo-dentals, linguo-palatals, or gutturals; and hence the value of the physiological knowledge which teaches us the intimate mode of their production.

[The patients are now brought, *seriatim*, before the class, and made to read words and syllables commencing with different consonants, especially with those of the explosive class.]

In the *first case* (R. G., æt. 26), the utterance of the explosive letters is arrested, and accompanied by a singular and sudden spasmodic protrusion of the lower lip. In the attempt to articulate such words as *Boston*, *bunch*, *boat*, *pill*, *pant*, *Pope*, *&c.*, an arrestation of the sounding breath occurs, accompanied by such protrusion, and the patient is thus rendered incapable of completing or perfecting the sound.

In the *second case* (R. S., æt. 34), the voice is arrested, and there is a sudden and energetic contraction of the lips. The voice cannot escape from the mouth, and the difficulty here is with those words which contain the dentals, as *Thomas*, *doctor*, *stone*, *&c.*

In the *third case* (D. D., æt. 25), there is spasm of the muscles that close the glottis, so that on attempting to pronounce the gutturals in such words as *grey*, *goose*, *great*, *king*, *court*, *&c.*, the glottis is quickly and spasmodically closed, and the current of air prevented from issuing, except by jerks.

The great object to be accomplished in the treatment of these cases, is to overcome the proximate cause—the neurosis, or irregularity of innervation, indicated by the spastic condition of the muscular apparatus brought into play in the process of articulation. To effect this, it appeared to Mr. Bates, and it was confirmed by experiments instituted on himself whilst suffering under the infirmity, that if a plan could be imagined to prevent the total interruption of expiration, which occurs in these cases, the patient would feel confidence in his being able to elicit the particular sound, and in this manner the spasmodic efforts might be prevented. He accordingly invented several well devised instruments and arrangements, adapted to the different varieties of stammering; either by preventing the spasmodic action of the muscles concerned, or by restraining, by appropriate pressure, the irregular contractions of the muscles. For example, when the lower lip and chin, in the *first case*, were confined by means of a simple broad bandage, like the one I show you, and pressure was thus exerted upon the spasmodically contracted musculus orbicularis oris of the lower lip, so as to prevent the protrusion of the lips, the letters, which were such stumbling blocks before, could be distinctly enunciated, and with a daily decreasing amount of hesitation.

For the second case, Mr. Bates has contrived, as you here see, a small plate, fitting closely to the palate, and affording attachment to a light narrow tube, the posterior end of which opens into the mouth, looking towards the fauces, whilst the anterior projects between the lips. By this contrivance the current of air is made to be in part continuous, and the patient finds, to his surprise and delight, that he can produce the sound without any other limitation than his will.

The subject of the *third case* has been materially benefited, and is, indeed, in a fair way to be entirely cured of his unfortunate habit, by means of a neckerchief or cravat, in which is a little spring, pressing—as you observe—directly upon the projection of the thyroid cartilage, in such a manner as to relax the rima glottidis, by approximating the thyroid to the aryteneoid cartilages; thus permitting the exit of air and preventing the spasmodic action of the muscles that close the glottis. The spring is so regulated, that the amount of pressure upon the thyroid cartilage can be increased or diminished, as occasion may require.

[The effects of these different forms of apparatus were exhibited on the stammerers before the class; and the action of each was clearly manifested.]

By such contrivances, which are simple, and adapted to the accomplishment of the object in view, Mr. Bates succeeds in effecting a great desideratum,—the *restoration of self-confidence*,—the want of which is a main obstacle to improvement in all such cases; for as soon as the patient becomes thoroughly and practically convinced that there is no difference between his vocal organs and those of his friends, whom he hears speak without difficulty or hesitation, he becomes inspired with confidence in himself, and his exertions are thenceforth the commencement of his restoration. Let it be, however, distinctly understood—and no one is more convinced of this than Mr. Bates himself—that no apparatus of this, or any kind, can, of itself, accomplish a cure. Nothing but a thorough system of practice and discipline, persevered in for a considerable period, can effect the work of restoration. The instrument merely infuses confidence. Withdraw it, and the case is left in the same condition as before. I can have no doubt, however, that with such a system, the stammerer may be amazingly benefited by the course pursued by Mr. Bates; but he must be thoroughly impressed with the fact, that time is one of the elements that must enter into his calculations, and that no plan can succeed without it.—*Philadelphia Medical Examiner, July*, 1852, *p.* 430.

15.—ON THE RELATION OF LARYNGISMUS TO EPILEPSY.

By Dr. E. Watson, A.M., Glasgow.

[After commenting on Dr. Marshall Hall's treatment of epilepsy by tracheotomy, Dr. Watson proposes, instead, the application of a solution of nitrate of silver (varying in strength with the requirements of the case) to the glottis of the epileptic patient, for the same reason as he would apply it in a severe attack of spasmodic croup,—viz., to allay the nervous excitability of the part in question. Dr. Watson proceeds to relate the following case.]

Early in January of this year (1852), I was called to a young lady, who had for several years suffered very frequent attacks of epilepsy, and when I first saw her she had but very short and uncertain intervals between the fits. These were very severe, and presented the usual characters of the disease in its most marked form.

Her bowels were thoroughly cleared out with croton-oil, and the cold bath was used with good effect. The fits became less frequent, though almost equally severe when they did occur. The valerianate of zinc and galvanism were then added to the cold bath, and due regulation of the bowels. I now, moreover, began to touch the glottis with a solution of one scruple of nitrate of silver in an ounce of water. This was continued every day for a fortnight, and afterwards for some weeks with longer intervals between the applications. By the middle of February, the fits had quite changed their character, being more like short faints than the regular convulsive paroxysms; and they have since then occurred very much less frequently. The patient has greatly improved in general health, and in activity of mind; and she has lost much of that dread of the disease which formerly rendered her existence miserable.

It is true that this is but a single instance, and that the present favourable state of the patient may not be permanent. Yet seeing that the remedy has, even in one case, been followed by such admirable results, that it is in itself most innocent, and so reasonable in theory, surely I am warranted in suggesting it for trial by my fellow practitioners. Nor ought it to be forgotten that, although I can only at present furnish one instance of its efficacy in curing epileptic laryngismus, abundance of proof might be adduced, to show its power to subdue laryngismus in other cases. In those of hooping cough alone, since I first proposed this plan in the 'Edinburgh Monthly Journal of Medical Science,' for 1849, I have treated to a conclusion some fifty-seven cases; and M. Joubert, of Cherion, has treated sixty-eight. Now, in all these hundred and twenty-five cases of hooping cough, the laryngismus was speedily cured, except in *eight* cases, which resisted the treatment, but were none the worse for it; for not one death occurred among them.—*London Journal of Medicine, July*, 1852, *p.* 642.

16.—*Chloroform in Delirium Tremens.* By W. Rogan, Esq., M. B., Londonderry.—[On the 13th of June last, this gentleman was called to visit a well-marked case of delirium tremens. He says,]

I immediately gave him a drachm of laudanum in half a glass of brandy, and directed it to be repeated every hour till he slept; he was also to be well supplied with strong beef tea. He took three doses of the medicine without its causing any tendency to sleep or abatement of the delirium. His pupils were now so much contracted, that I hesitated to give more opium, and determined to try chloroform. I administered it on a handkerchief, without any opposition from the patient, who seemed amused at the process. In a short time he was under its influence lying quiet, and breathing naturally. I kept up its effects for about three quarters of an hour, and then withdrew it. He roused up shortly after, quiet in manner, and evidently better. In about ten minutes, he fell asleep, and slept for seven hours without intermission. When he awoke he was quite sensible, and much refreshed. He took some food, and again slept for some hours longer, and awoke quite well, and able to return to his work. The above is a good example of the benefit of chloroform after opium has been pushed as far as seems compatible with safety.—*Med. Times and Gazette, Aug.* 14, 1852, *p.* 174.

17.—*On the Treatment of Facial Neuralgia.*—M. Cazenave informs us (Revue Medico-Chirurgicale) that he has had marked success in removing the pains of hemicrania and facial neuralgia by means of the following pomade:—

Pure chloroform, dr. iv.
Cyanide of potassium, dr. iijss.
Axunge, oz. iij.
Wax sufficient to give consistence.

M. Cazenave professes to have tried the cyanide of potassium alone, without any benefit, and therefore concludes that it is this particular combination which is so valuable. The mode of using it is to rub ointment, the size of a pigeon's egg, into the scalp, after which the head is to be covered with an oiled-skin cap. The inunction is to be repeated according to circumstances. In facial neuralgia it is rubbed in over the affected nerve.—*Provincial Medical and Surgical Journal, July* 21, 1852, *p.* 380.

DISEASES OF THE ORGANS OF CIRCULATION.

18.—ON SOME OF THE PRINCIPAL EFFECTS RESULTING FROM THE DETACHMENT OF FIBRINOUS DEPOSITS FROM THE INTERIOR OF THE HEART, AND THEIR MIXTURE WITH THE CIRCULATING BLOOD.

By Dr. William Senhouse Kirkes.

[The following observations on the above subject were communicated by Dr. Burrows, to the Royal Medical and Chirurgical Society.]

As an introduction to the subject, the author observed that it was a clearly established fact, that the fibrinous principle of the blood might, under certain circumstances, separate from the circulating fluid, and be deposited within the vascular system, especially on the valves of the heart. The forms of fibrinous concretions to which the following observations especially applied, were, first, the masses usually described as Laennec's globular excrescences; and secondly, the granular or warty growths adhering to the valves, and presenting innumerable varieties, from mere granules to large irregular fungous or cauliflower excrescences projecting into the cavities of the heart. These growths, when once formed, whatever might be their origin, were full of peril, and would often remain so, long after the circumstances which gave rise to them had passed away. When of large size, or loosely adherent, they might at any time be detached from the valves, and conveyed with the circulating blood, until arrested within some arterial canal, which might thus become completely plugged up, and the supply of blood to an important part be suddenly cut off, from which serious, if not fatal results would ensue; or, smaller masses might be detached, and pass on into arteries of much less size, or even into the capillaries, whence congestion, followed by stagnation and coagulation of the blood, and all the consequent changes such coagulated blood is liable to undergo in the living body, would necessarily follow. Many singular morbid appearances observed in internal organs, and not well accounted for, were probably brought about in this manner. Again, the masses of fibrine might soften, break up, and discharge the finely granular material resulting from their disintegration into the circulating blood, and, contaminating this fluid, might excite symptoms very similar to those observed in phlebitis, typhus, and other analogous blood diseases. Thus the fibrinous material detached from the valves, or any other part of the interior of the heart, might be the cause of serious secondary mischief. The parts of the vascular system in which these transmitted masses of fibrine might be found, would, in a great measure, depend upon whether they were detached from the right or left cavities of the heart. Thus, if from the left, they would pass into the aorta and its subdivisions, and would be arrested in any of the systemic arteries or their ramifications, and especially into those organs which receive large quantities of blood direct from the left side of the heart, as the brain, spleen, and kidneys; on the contrary, if escaping from the right cavities, the lungs would necessarily become the primary, if not the exclusive, seat of their ultimate deposition. A division of the subject being thus naturally formed, the author proposes to consider the subject, first, as to the remote effects resulting from the separation of fibrinous deposits from the valves or cavities of the left side, and secondly, as to the corresponding effects produced by the detachment of like deposits from the valves or cavities of the right side of the heart. The author then proceeded to elucidate the first branch of the subject, in which masses of some magnitude were detached from the left side, and arrested in an arterial channel of notable size. This pathological fact was illustrated by three cases, in many respects identical; for, in each, death appeared to ensue from softening of the brain consequent on obstruction in one of the principal cerebral arteries by a mass of fibrinous material, apparently detached from the growths on the left valves. The first case was that of a female, aged thirty-four, of pale and delicate aspect. She had suffered from rheumatic pains, and there was a loud systolic murmur heard over the entire cardiac region. While under treatment for these symptoms, she suddenly fell back as if fainting. She was found speechless, with partial hemiplegia of the left side, but there was no loss of consciousness; the hemiplegia increased, involved the face and limbs, and gradually became complete in regard to motion; but sensation remained un-

impaired. These symptoms lasted five days, when she quietly died. The post-mortem examination developed much congestion of the pia mater, amounting in some places to ecchymosis. The right corpus striatum was softened to an extreme degree—being reduced to a dirty, greyish-white pulp. In the posterior lobe of the right cerebral hemisphere, was a similar spot of pale softening. The right middle cerebral artery, just at its commencement, was plugged up by a small nodule of firm, whitish, fibrinous-looking substance, not adhering to the wall, but rendering the canal almost impervious. The vessels of the brain were generally healthy, except a yellow spot or two in the coats of those at the base of the brain. The heart was enlarged; several broad white patches externally. The right valves were healthy, so also were the aortal; but the mitral valve was much diseased, the auricular surface being beset with large warty excrescences of adherent blood-stained fibrine. The right common iliac artery, about an inch above the origin of its internal branch, was blocked up by a firm, pale, laminated coagulum, which extended into the internal iliac. The pleuræ were adherent in places; liver and intestinal canal healthy; spleen large, pale, and soft, and contained a yellowish-white, cheesy substance. The kidneys were pale, rough, and granular; within the cortex of the right were several large masses of yellow deposit, surrounded by patches of redness. Death had resulted in this case from the softening of a large portion of the right side of the brain, which the author considered to have arisen from an imperfect supply of blood, consequent on the middle cerebral artery of the same side being obstructed by a plug of fibrine. The author then discussed the sufficiency of such an obstruction to produce the effects ascribed to it, and he brought forward many examples showing that atrophy and disorganization usually resulted from any circumstance which materially impeded, or entirely cut off, the supply of blood to a part. The author then directed attention to the probable source of the fibrinous plug found in the middle cerebral artery. The suddenness of the cerebral symptoms rendered it probable that the blocking up of the artery was equally sudden, and not the result of gradual coagulation of the blood within the vessel. The absence of all local mischief in the coats of the artery at the point of obstruction, as well as elsewhere, pointed to some other than local origin for the clot; and the author, at the time of the examination, formed the opinion, that a part of the fibrinous deposit on the mitral valve had become detached, and carried by the stream of blood, until arrested at the angle whence the middle cerebral proceeded. This explanation suited equally for the plug found in the common iliac; for it was quite conceivable that portions of the loosely adherent fibrine might be easily detached by the stream of blood washing over the mitral valve, and when once admitted into the circulating current, they would only be arrested by arriving at a vessel too small to allow their transit along its canal. Two other cases were described by the author, possessing many interesting points of resemblance: one, a female, aged twenty-four; the other, a male of the same age. Both were admitted into the hospital with hemiplegia of the left side; each had heart disease, indicated by a loud systolic murmur. The post-mortem examinations revealed the following morbid appearances common to both:—

Softening of a limited portion of the brain, producing death by hemiplegia; obliteration of the cerebral artery supplying the softened part; coagula in one of the iliac arteries; fibrinous deposits in the kidneys and spleen; and the presence of fibrinous warty excrescences on the valves of the left side of the heart. So many and such rare features of resemblance could not fail to demonstrate a very close connexion between the several morbid appearances so exactly reproduced in each case. The author believed that these three cases satisfactorily established the two following conclusions—1st, that softening of a portion of the brain, with attendant loss of function, might result from obstruction of a main cerebral artery by the lodgment of a plug of fibrine within its canal; 2ndly, that the foreign substance thus obstructing the vessel was probably not formed there, but was derived directly from warty growths situated on the left valves of the heart. The author thought it not improbable, although in the absence of direct proof it was but supposition, till further investigation confirmed these facts, that many cases of partial and temporary paralysis suddenly ensuing in one or more limbs of young persons, especially if accompanied with signs of cardiac disease, might be due to interruption of a proper supply of nutriment to the brain by the temporary plugging up of

a principal cerebral artery by fibrine, detached from a diseased valve on the left side of the heart. Other arterial branches, besides those of the base of the brain, might arrest these fibrinous deposits derived from the valves of the heart. In cases 1 and 2, coagula were found in the iliac and femoral arteries; and in case 8, in the renal. The author thought that many specimens found in museums, and supposed to illustrate the spontaneous coagulation of the blood, or the deposition of fibrine within a limited portion of an arterial trunk, were probably to be referred to the same cardiac origin, and he illustrated the point by reference to a preparation in the museum of St. Bartholomew's Hospital. The second subject of inquiry consisted of an examination into the effects produced by smaller portions of fibrine detached in a similar manner, but arrested in the minute arterial branches, or even in the capillaries. The author thought that the singular masses of yellow fibrinous substance found in the spleen and kidneys, and other organs, and hitherto described as "capillary phlebitis," "metastasis," or "fibrinous deposits," were derived from this cause. Out of twenty-one cases in which the author had observed these deposits in the spleen and kidneys, or other parts deriving blood directly from the left side of the heart, in nineteen there was disease of the valves, or of the interior of the left side of the heart. In fourteen of these there were fibrinous growths on the surface of the left valves; in the remaining five there was simple mention of valvular disease. The author thought that the mere fact of so large a number of cases of so-called "capillary phlebitis" being associated with the presence of fibrinous deposit on the valves of the heart, suggested a very close relation between the two morbid states. The author then entered upon the third branch of this part of the subject, concerning the series of effects which might result from the introduction of fibrinous particles into the circulating blood, manifesting phenomena indicative of the existence of a morbid poison in that fluid. A case was related of a youth, aged fourteen, admitted into the hospital with obscure typhoid symptoms, the surface of the body being covered with petechiæ. Delirium, with much febrile prostration, followed; he became subsequently comatose, and died. Upon an examination of the body, the surface was found covered with petechiæ. The pia mater was infiltrated with what seemed recently effused blood. The surface of the brain thus presented a blotchy appearance, and amid these spots were yellow-coloured patches of various size; some were of a greenish-yellow hue, and had the appearance of being smeared over with pus. The brain was unduly congested, and some ecchymosis was near the surface; the cerebral arteries and sinuses healthy; several petechial spots on the surface of the heart, as well as in the cavities; and on the auricular surface of the mitral valve some white fibrinous vegetations, very soft and friable; a like deposit on the aortic valves, with evidence of ulceration; several yellow masses of fibrinous deposit on surface of spleen; cortical part of the kidney covered with minute petechial spots, in the centre of which was a buff-coloured dot; several large yellowish blotches extended deep into the substance of the cortex. The intestinal mucous surface was covered with petechial spots, which were apparent also on the mucous membrane of the bladder, pharynx, œsophagus, stomach, larynx, and trachea. The author considered the mystery of this case cleared up by the post-mortem examination. The attack had been ushered in by a severe pain in the right groin, which was rheumatic; then ensued rheumatic inflammation of the mitral and aortic valves, with ulceration of the latter, and deposition of fibrine. From these deposits portions had probably separated during life, and were transmitted with the blood to all parts of the body, and being arrested in the capillary networks and smaller arteries, produced the various petechial and buff-coloured spots above described.

The second part of the paper related to the effects which might result from the detachment of fibrinous deposits from the right valves of the heart. Reference was made by the author to a paper on the Formation of Coagula in the Pulmonary Artery, by Mr. Paget, published in the 'Transactions of the Society,' as well as to a specimen in the museum of St. Bartholomew's Hospital, in which there was deposition of fibrine on each of the pulmonary valves, with old coagula filling many branches of the pulmonary artery. In this case several large, solid, fibrinous masses were found in the substance of the lungs, presenting appearances not unlike portions of old pulmonary apoplexy. Lastly, the author recapitulated the principal points which he was desirous of establishing, viz.,—1st. That fibrinous

concretions in the valves of the heart admit of being readily detached during life. 2ndly. That if detached and transmitted in large masses, they may suddenly block up a large artery, and thus cut off the supply of blood to an important part; if in smaller masses, they might be arrested by vessels of smaller size, and give rise to various morbid appearances in internal organs; or the particles mingled with the blood might be but the *débris* of softened fibrine, yet with power to produce a poisoned state of the blood, and bring on typhoid or phlebitic symptoms. 3rdly. That the effects produced and the organs affected would be in great measure determined by the side of the heart from which the fibrinous material had been detached; if from the right side, the lungs would bear the brunt of the secondary mischief; but if, as was most commonly the case, the left valves were the source, the mischief would be more widely spread, and might fall on any part, but especially on those organs which were largely and directly supplied with blood from the left side of the heart, as the brain, spleen, or kidneys.—*Lancet, June* 5, 1852, *p.* 542.

19.—*Case of Death from the Formation of Fibrinous Concretion in the Heart.* By DR. WALTER GARSTANG, Saddleworth.—[The patient in this case was aged 64. He was attacked with erysipelas of the head and face, combined with symptoms of congestion of the liver. From these he gradually recovered, though the system did not seem to regain strength, and the heart's action was very feeble. Five weeks after the first attack he caught a slight cold, and a mild repetition of the erysipelas, and hepatic derangement appeared.]

These symptoms, however, were checked as speedily as before; the appetite returned, and digestion seemed to be easily accomplished; and yet, with all these favourable appearances, his strength failed, the action of the heart and respiratory movements gradually grew feebler, and at length, without any sign of pulmonary, cerebral, or abdominal disease, these asthenic symptoms slowly terminated in death, just eleven weeks after the first commencement of the erysipelatous attack.

Post-mortem.—With the exception of a slight enlargement of the liver, we could find no organ exhibiting structural change. The lungs were perfectly healthy. Upon opening the heart, however, we discovered what, in my opinion, fully accounts for the gradual dissolution; a fibrinous mass filled both its right cavities, and sent up large and long branches into the pulmonary artery and its ramifications. The concretion was firm and white, and had an attachment to the walls of the heart.

Remarks.—I have but few remarks to make on this interesting case, and I should probably never have thought of publishing it at all, had not my attention been forcibly drawn, during the last few months, to certain observations which have been made before the Medical Society of London, by Mr. B. W. Richardson, "On the Fibrinous Element of the Blood," and which have been reported in the columns of 'The Lancet.' I find that in a paper read by Mr. Richardson in November last, he thus observes: "Lastly, in cases of asthenia, where fibrinous concretions exist in the heart, the very cessation of the act of life may be owing to their presence and gradual increase, the central organ of the circulation becoming literally choked by them." In January, again, the same author briefly alluded to this subject, and produced a pathological specimen which strongly supported his views; and, lastly, in the month of March, on exhibiting another heart in which a fibrinous clot was found, he gave more enlarged views on the matter, and threw out the idea, that, during those diseases which are known to be attended with an abnormal quantity of fibrine in the blood, it may be that some of the overplus of fibrine is deposited on the elevated structures of the moving heart; and he concluded by saying that, "In all inflammatory cases marked by great super-fibrination of the blood, and which end by what is called sinking, it would be interesting to learn how far similar concretions in the heart may be concerned in bringing about the sinking state."

Now, without wishing to mention the many theoretical points which Mr. Richardson and other physiologists enter into with reference to the formation of fibrine, &c., &c., I cannot but observe, that the case which I have related above affords striking testimony as to the correctness of the opinions from which I have just quoted. My patient had suffered from erysipelas, a disease in which the blood is

always super-fibrinized: he sank in the most gradual manner, and the autopsy revealed no cause for the sinking, except (what was surely sufficient) a large fibrinous concretion in the heart.

Of course the narration of a single case does not go far to establish any new opinion, but perhaps it may excite others to turn their attention to the same subject. I have been puzzled, over and over again, at seeing patients gradually sink into death, after some slight disorder, with no evident disease that could account for such a serious result. Now, if any explanation so simple as that given by Mr. Richardson should prove, after further research, to account for some of these occurrences, a great step in the practice of medicine will certainly have been made. —*Med. Times and Gazette, Sept.* 11, 1852, *p.* 259.

20.—ON FIBRINOUS DEPOSITS ON THE LINING MEMBRANE OF VEINS.

By Henry Lee, Esq.

Simple inflammation of the veins—that is to say, inflammation commencing in the coats of the veins—is regarded by the author as a very rare disease. The lateral lining of veins especially would appear to be as little susceptible of inflammation as any structure in the body. The large number of instances of phlebitis met with in surgical works, and occurring in daily practice, are regarded by the author as depending upon and as being excited by, a vitiated condition of the blood. This opinion is principally supported by the two following facts: first, that in every case of so-called inflammation of the veins, the blood will be found to have coagulated in the vessels; and secondly, that where such coagulation does not take place, no inflammation will be produced. Continental writers of the highest reputation have, indeed, mentioned the concentric layers of lymph which are secreted as the result of inflammation in the interior of veins; and English writers, whose names carry with them the greatest authority, have described the adhesion of the opposed sides of veins by lymph secreted from the capillaries under a state of inflammation. The advocates of this view have particularly referred to an experiment by M. Gendrin, in which he mentions, that, by introducing irritating substances into the arteries and veins, he obtained large deposits of lymph upon their interior. The author, on the contrary, having found that inflammation of the coats of the veins only occurred in cases where the blood has previously coagulated in them, was induced to believe that the deposit found in the veins might be derived directly from the blood. M. Gendrin's experiment was therefore repeated, precautions being taken to exclude all blood from the vessel; and it was found that under these circumstances no lymph was effused in the vein. The lining membrane of the veins does not contain any blood-vessels of its own, nor does it require any, being in direct contact with the blood. It appears reasonable to suppose, that under such circumstances it would not secrete lymph, and the experiments and observation of the author lead him to this conclusion. The lining membrane of a vein, the outer coats of which are inflamed, may undergo various changes, or may be disintegrated, and cast off into the cavity of the vessel. Lymph and pus may then be secreted into the interior of the canal; but this can only occur in the latter stages of the disease. The readiness with which some morbid poisons produce coagulation of the blood, and the constancy with which such coagulation (indicated by the cord-like induration of the vessel) is found to precede the other symptoms of inflammation, lead to the conclusion, that a vitiated condition of the blood is the common cause of phlebitis. Under such circumstances, although the irritation produced is caused by the morbid matter detained in the vein, yet the inflammation is at first manifest in the surrounding parts. The cellular tissue becomes distended with serum; the cellular coat of the vein then becomes thickened, red, and inflamed; and, finally, the changes which have been noticed extend to the lining membrane. The effects of inflammation thus are shown to extend to, and not from, the internal surface of veins. M. Cruveilhier indeed regards the coagulation of blood in a vessel as the effect of inflammation previously existing. But the author has satisfied himself, that if blood be prevented from stagnating in a vein, no change will be thereby produced in its lining membrane. The inflammation

is not, therefore, propagated by continuity of surface, as has been generally supposed, but by the stagnation, in different parts, of vitiated blood. Coagulation of the blood would therefore appear to be the cause, and not the effect of inflammation of veins. This view is further supported by the fact, that simple adhesive inflammation of a vein will not produce coagulation of its contents. A preparation was exhibited, showing the effects of a ligature upon a vein twenty-four hours before death. No coagulation of the blood, nor deposit of fibrine on the lining membrane, had in this case taken place. The coats of the vein were thrown into folds, and a white band marked the situation of the ligature; but the projecting folds of the lining membrane presented their natural, smooth, polished, and lubricated appearance. Healthy venous blood will remain fluid for days, when confined in a vein by a ligature. In this respect there is a contrast between a vein and an artery. In the latter case, the internal coats are divided, and the blood, coming in contact with the divided edges, immediately coagulates. In the vein, on the contrary, the lining membrane is not divided, and therefore the blood remains in contact only with the natural lining of the vessel. Cases in which a small quantity of pus has been introduced into a vein, afford the strongest contrast to those in which the coats have been mechanically irritated. In the latter case, no coagulum will form, or one only sufficient to unite any lesion there may be of the lining membrane. In the former, on the contrary, extensive fibrinous plugs will occupy the vessels. These will sometimes occupy the whole diameter of the vein, and become firmly attached to its sides; at other times, the outer layers only will become firmly coagulated, and the central ones will remain in a semi-fluid condition. It will sometimes happen that the central portions will be removed, leaving the outer layers attached to the walls of the vessel. The circulation may then be continued through an adventitious cylinder of fibrine. Cases occasionally occur, in which a delicate velvety layer only is deposited on the lining membrane, which remains unaltered in appearance in other parts. The coagula which form in veins will, under such circumstances, lose, in different situations, much of their colouring matter; and it will be observed that the lining membrane of the vein is coloured (from imbibition) in exact proportion to the amount of colouring matter contained in the different parts of coagula. It will occasionally happen, that portions of the decolorized fibrin will become organized and intimately connected with the sides of the veins, as illustrated in a preparation exhibited to the society. Such layers of fibrine appear constantly to have been mistaken for lymph, the product of inflammation. The extreme readiness with which the blood coagulates from the contact of purulent matter, affords a most important provision for the security of the general system. It appears to depend upon a faculty with which the blood is endowed for its self-preservation. This faculty, although hitherto unacknowledged by physiologists, doubtless exists, and is comparable to the preservative sensibility with which every other part of a living being is endowed. When purulent fluid is introduced into a vein, if the coagula are firmly formed, a local inflammation will alone ensue; but, if the morbid matter extends along the vessel, a high degree of constitutional irritation will follow, and the symptoms will occasionally bear a striking resemblance to those of typhus fever. In cases as they present themselves in practice, these two sets of symptoms are constantly present at the time; but they may be produced separately by a very simple experiment: if, for instance, purulent fluid be introduced into a vein, and allowed to remain undisturbed, a local inflammation only will be set up, which will terminate in the formation of an abscess around the vein. The contents of the vein will then become softened, and expelled externally, together with the contents of the abscess. But, if the morbid matter be forced forward, in the course of the circulation, no local inflammation will occur, but the symptoms will indicate either the presence of secondary inflammation in some internal part, or of a general contamination of the blood. If the view taken of the origin of inflammation of the veins be correct, it will be evident, that any treatment, to be effectual, must have reference to the first periods of the disease; and that those remedies will most effectually guard the system against the contamination (so much dreaded in this class of cases) which will favour the sequestration of vitiated blood, and tend to localize the disease. The remedies which have been employed to subdue the local inflammation, appear but too often to have done so at the expense of the

general system; for, although the local symptoms have become less prominent, fatal mischief has appeared in other parts. In severe cases, those remedies only can be safely employed which tend to preserve the power of the blood, and especially those which increase its coagulating power, so as to enable it to separate that portion which has become infected from the general circulation. Bark and opium, together with a nutritious diet, are the means which appear to favour these actions, upon the due performance of which the safety of the patient depends; while bleeding and calomel, however useful they may be in a case of simple inflammation of the coats of a vein, appear inadmissible when the disease, as generally happens, originates in its contents.—*Med. Times and Gazette, May* 15, 1852 *p.* 503.

21.—DR. BILLING'S THEORY OF THE SOUNDS OF THE HEART.

[Mr. George Halford, House Surgeon to the Westminster Hospital, in a letter to the editor of 'The Lancet' on the above subject, remarks:]

In 'The Lancet' of 1832, Dr. Billing first stated that "the push or beat at the side is caused by the ventricular muscles in their systole to expel the blood. The first sound is caused by the tension produced in the shutting of the auriculo-ventricular valves; and the second sound is caused by the tension produced in the shutting of the ventriculo-arterial valves, &c. This is a simple unsophisticated explanation of the causes of the beat and sounds of the heart; and you will find that the morbid signs are all explicable as alterations of these."

Subsequently Mr. Bryan, of Stowmarket, adopted the same views. He says, "I shall content myself with offering an explanation of the first sound, founded on a simple law of physics, examples of which are so frequently before us as to have rendered it familiar to every one. Any flexible solid, suddenly brought from a state of relaxation to a state of tension, vibrates, and its vibrations are sonorous or not—*i. e.*, audible or not—according to its physical structure. At the commencement of the systole of the ventricles, their auricular valves are flapped into play, and, at the instant of their closure, the whole substance of the ventricles, and the valves, are suddenly brought to a state of tension, and then consequently vibrate. I leave it to the reader to determine, according to the laws of physics, whether the vibration of the valves, floating freely in fluid, or the muscular substance of the ventricles, trammelled by the contact of surrounding solids, would most contribute to the formation of the first sound.

In 'The Lancet,' (see Retrospect, Vol. XXI.) Mr. Brakyn, of Dublin, reported a most ingenious experiment, in which air was substituted for blood, and the sounds of the heart correctly produced, allowance being made for the different medium. Before he left England I had an opportunity of witnessing the experiment in Mr. Lane's theatre, and afterwards I was present at several repetitions of the inquiry, when the subject was taken up by my fellow-students, Messrs. Waters and Sercombe.

Fully recognising the value of this beautiful experiment, I still felt that something more was wanting, and after much thought, I proceeded thus:—

Chloroform having been administered to a large dog, and insensibility produced, an opening was made into the trachea, and artificial respiration maintained. The anterior part of the thorax was then removed, and the pericardium slit up, so that the sounds of the heart were distinctly audible through the medium of a stethoscope. The superior and inferior venæ cavæ, and the pulmonary veins at their entrance into the left auricle, were now compressed between the fingers, and the heart continuing its action, a stethoscope was again applied, and neither first nor second sound was heard. After a short space, the veins were allowed to pour their contents into both sides of the heart, and both sounds were instantly reproduced. The veins were again compressed, and all sound extinguished, notwithstanding the heart contracted vigorously. Blood was again let in, and both sounds restored.

This experiment I have frequently repeated upon dogs and donkeys, and once in the presence of many persons, amongst whom I remember the following gentle-

men :—Drs. Marshall Hall, Wilson, Daniel, Pettigrew, Fuller, and Ogle ; Messrs. Tatham, Lane, H. C. Johnson, Blenkins, J. R. Lane, &c.

All that is claimed for the above experiment is its exemption from any rude interference with the mechanism of the heart's action. The cavities of the heart are untouched, there is no finger thrust into the auricle or ventricle, no hooking back of valves—in fact, not one source of sound substituted for another. Both sounds are destroyed and reproduced by the same means, the strongest argument for their depending upon the same cause, which is simply the backward current of the blood, first against the auriculo-ventricular, and second against the ventriculo-arterial valves.—*Lancet, June* 26, 1852, *p.* 618.

22.—ON GALLIC ACID IN HÆMOPTYSIS.

By Dr. William Bayes, Brighton.

[In the following case there seem to have been conflicting opinions as to its exact nature, some positively stating it to be bronchitis, others as positively asserting it to be phthisis. On the occasion, however, of Dr. Bayes being consulted, a slight exertion had been followed by an attack of hæmoptysis, to the extent of two or three tablespoonfuls. Dr. Bayes first prescribed a few grains of sulphate of magnesia with sulphuric acid in infusion of roses; and this treatment seemed attended with great benefit. Dr. Bayes remarks:]

I do not remember to have seen so rapid a change for the better in six days, but, on the 12th of June, I was as much grieved as astonished to see my patient walk into my consulting room, leaning upon the arm of his wife. Before, however, I had time to express my displeasure, the poor gentleman sank into my chair, and the hæmoptysis returned worse than at the first. Every fifth or sixth inspiration brought on the cough, and every cough was followed by sputa of frothy florid blood. I was seriously alarmed for him, and as soon as possible had him conveyed home, and laid upon the sofa, with the strictest injunctions that he should neither be allowed to speak nor to move. I ordered him five grains of gallic acid every second hour, and was pleased to see that the hæmoptysis gradually diminished. He probably had lost half a pint of blood between twelve o'clock at noon (when he called on me) and nine at night, the interval between each expectoration being, at the latter hour, about twenty minutes, and the colour still florid, although somewhat less bright. At a quarter past eleven o'clock the same night I was summoned hurriedly. In undressing the patient, the hemorrhage had a third time recurred. His breathing was now hurried, every inspiration brought on a cough, and every cough brought up bright arterial-looking blood. He was becoming faint and livid-looking when I arrived, and I really was afraid lest he should have been suffocated. The air passing through the blood already in his throat produced a gurgling sound, which alarmed his wife, to whom it sounded like the "death rattle." I now took a drachm of gallic acid, put it in a six ounce bottle, dissolved it in hot water, and added rather more than a tablespoonful of brandy. I cooled this mixture in some ice which was in the room, and gave Mr. R. a dessert spoonful of it every three minutes. The pulse, which could not be felt at the wrist, recovered slightly after the third dose. At the end of half an hour the face became less livid, and he seemed much revived; I, however, continued the gallic acid every five minutes until the end of the first hour, and afterwards every ten minutes until nearly two hours had elapsed, when, to my great joy, the expectoration became perfectly inky. After the first inky expectoration the breathing became greatly relieved, and the patient fell into a quiet doze. He had taken the first drachm of gallic acid in one hour and fifty minutes. I then mixed a second drachm, in the same manner as the first, and gave him a tablespoonful of the mixture at half-past one o'clock, after which he fell asleep soundly; I then left him, with orders that the gallic acid should be given him, in five-grain doses, every hour, for six hours, while he was awake, or to be repeated every ten minutes, if the hæmoptysis were to recur. On calling next morning I found he had expectorated but twice, and the sputa were perfectly inky. I kept him under the influence of the gallic acid for three days, gradually diminishing the frequency of the dose. At the end of this

time, as he had neither cough nor expectoration, I changed his medicine to the infusion of roses and sulphate of magnesia, and ordered him also to take five-drop doses of creasote, three times a day upon sugar; he now went on steadily getting well. I found it rather difficult to prevent his committing indiscretions in exercise and in diet, and therefore curbed him a little, by giving him minute doses of tartarized antimony; and upon the 26th, or fourteen days after his severe attack, he was so far recovered, and had for some days borne exercise in the open air so well, that I allowed him to go home again to London; indeed for the last three days I could scarce persuade him that he was an invalid.

Perhaps one of the most satisfactory results of the large doses of gallic acid, was the entire disappearance of the diabetes, and the simultaneous reappearance of bile and sufficient stools. Another point worthy of notice was, that the patient weighed precisely the same upon the day he left Brighton as he had done one month previously.

There is yet a third point to which I would direct the attention of the reader: that the dyspnœa was almost completely relieved as soon as the system was well saturated with the gallic acid. The difficulty of breathing was, no doubt, caused by the gorged state of the vessels of the lungs, which was relieved by the powerful astringent acting upon them from within.—*Prov. Med. and Surg. Journal, Sept. 29th*, 1852, *p.* 498.

DISEASES OF THE ORGANS OF RESPIRATION.

23.—ON THE TREATMENT OF PNEUMONIA.

By Dr. R. B. Todd, F.R.S., &c.

[The following cases illustrate a mode of treating pneumonia materially different from that which is most commonly employed. Dr. Todd commences by saying:]

I will just observe, *in limine*, that the plan of treatment which I have pursued in the cases now convalescent, as well as in many others, consists, not in the use of remedies directly antiphlogistic (so-called), that is, of remedies intended directly to knock down inflammation by withdrawing blood, the supposed fuel of all inflammation, and by reducing vital power, but in the employment of means which will promote the free exercise of certain excretory functions by which the blood may be purified, and certain matters may be removed from the system, which, remaining in it, tend to keep up a state very favourable to inflammatory affections. The remedies to which I refer tend to promote the free action of the skin and of the kidneys, and in a less degree that of the intestinal mucous membrane; whilst, at the same time, a free stimulation is maintained of that part of the skin which is near the seat of the pulmonary inflammation; and an essential part of this treatment is, that whilst these remedies are being used, we do not aim at reducing the general powers of the system, but rather at upholding them by such frequent supplies of nourishment, easy of assimilation, as may be readily appropriated; and when necessary, even by the administration of stimulants,—on this principle, that the free exercise of two such great excretions as come from the skin and kidneys, would, if fed only from the tissues and the blood (without the introduction of fresh supplies), necessarily weaken and exhaust the general powers of the patient to an extent inconsistent with the full exercise of the process of repair needed by the inflamed organ.

Some physicians have drawn a distinction between cases of pneumonia, which is very useful with reference to treatment. There are, they say, two classes of cases of pneumonia; the one sthenic, the other asthenic and typhoid; the former capable of bearing the most active antiphlogistic treatment, and for which, indeed, they say, that that treatment is absolutely necessary; the latter requiring a supporting and even a stimulating plan, and for which an antiphlogistic plan would be extremely hazardous and dangerous. Now, while I fully recognise and admit the great practical value of such a distinction as this, I must remark that it seems to me that it ought to be expressed differently. I would say that all cases of pneumonia have, independently of this or that mode of treatment, a decided tendency to depress the general powers of life—some more, some less; and that, with

all, a very decided direct antiphlogistic treatment is hazardous,—with some, extremely so,—and that in none is it absolutely necessary; but, with others, there is no safety for the patient, unless the treatment from the beginning be of a decidedly supporting and stimulating nature.

You will note the distinction which I make between remedies *directly* and *indirectly* antiphlogistic. The former is a class of remedies whose supposed efficacy is founded upon a notion (an erroneous one, as I think), namely, that certain acute and sthenic inflammations are attended with an undue exaltation of the vital forces, both local and general, and that these must be depressed before the inflammation will yield. I say, I think this view erroneous, for while I would readily concede, that in pneumonia there is an exaltation of vital force at the inflamed part, it seems to me quite plain, from the clinical history of the malady, that the local inflammation draws so largely upon the rest of the system as to depress the general powers of life; else, whence the weakness, the exhaustion, the failure of appetite, the wasting, which take place in the course of the disease, even when favourable, independently of any particular treatment?

The remedies indirectly antiphlogistic are those by which it is professed to promote and exalt some particular functions, as sweating or some other secretion, and thereby to purify the blood, by eliminating noxious matters through those channels, and by such purification of the blood to reduce or remove febrile symptoms.

The first of the two cases to which I shall refer to-day, is that of Edward Mills, aged 28. He is a railway porter, a good specimen of a strong, athletic man, of active habits and accustomed to hard work, and, at the same time, evidently a person who has been well fed. In short, he is a person just adapted, by constitution and habit, to bear antiphlogistic treatment, if such were necessary.

On the 3d January, 1851, he was seized with shivering, headache, shortness of breath, and cough, soon followed by the occurrence of a sharp pain in the left side, particularly upon taking a deep breath, and all this accompanied by a loss of appetite and fever. The next day he began to expectorate a quantity of very viscid and rusty mucus, and the breathing became more rapid, and the cough more frequent and troublesome; and on the 5th he came into the hospital.

The character of the sputa at once attracted our notice; and those of you who came round with me will recollect that I particularly directed your attention to its extreme viscidity, and showed you how it adhered to the vessel in which it was received; so much so, that I could turn the pot upside down without the least displacement of its contents. We likewise observed the peculiar rusty colour of the sputa. The matter expectorated in such cases looks exactly as if it had been mixed with iron rust. The peculiar colour is caused by the admixture of a certain amount of the coloured particles of the blood, which may be seen in it through the microscope. The mixture is evidently very intimate; there is, in fact, in these cases, a hemorrhage, doubtless from the naked vessels of the pulmonary air-cells. But the appearance and colour of the sputa differ very decidedly from those of the expectorated matter in ordinary cases of hæmoptysis. I think the difference is to be explained thus: In pneumonia, a copious secretion of mucus takes place from the membrane of the extreme bronchial tubes, or bronchial passages; and blood escaping from several very minute vessels, becomes intimately intermixed with the mucus, and gives it its rusty colour. The escape of blood and the secretion of mucus take place simultaneously, and in about equal proportions, and are dependent on the same cause, namely, that which irritates the lung. But in hæmoptysis, the escape of blood is independent of any secretion of mucus, and often takes place without it, and the quantity of blood is always greatly in excess of that of mucus.

When present, this viscid and rusty state of the sputa is a pathognomonic sign of pneumonia. Indeed, the great viscidity alone, even without any red colour, but with a yellowish, bilious hue, ought always to excite our apprehension, lest pneumonia may be commencing. Passive congestion of lung, such as we may meet with in low fevers, or in heart disease, will, however, sometimes give rise to sputa not unlike those of pneumonia, but to be distinguished from them by their being less viscid, and containing more blood, which is much less intimately mixed with the mucus.

Although the rusty and viscid character of the sputa will often enable us with certainty to diagnose the presence of inflammation of the substance of the lung,

we must not conclude, that the absence of this characteristic expectoration is a positive proof against the existence of pneumonia. Many cases of pneumonia pass through all their stages, and resolution takes place, without the occurrence of any expectoration, or with that of a very trifling amount of colourless mucus. In the cases of typhoid pneumonia, it is not uncommon to find, that the patient does not expectorate, probably owing to his weak and sluggish state, his sensibilities being much blunted.

We found that our patient exhibited certain well-marked constitutional symptoms. He had a flushed face, and a hot and dry skin, and a tongue coated with a thick, white fur. He also complained much of thirst, and of a troublesome cough, and he suffered from a shooting pain in the left side, below and a little in front of the scapula, and extending over the shoulder, which impeded his breathing, and was increased by deep inspiration. At the same time there was no very great increase in the quickness of pulse (it was 96), but the respirations were much more frequent than in health, being 36. The pulse was full and strong, and such as would have not only justified, but invited bleeding, if we allowed ourselves to be influenced by that single symptom in adopting such a line of treatment.

A careful examination of the chest at once enabled us to determine the exact nature of the evil under which this patient was suffering. By percussion and auscultation we found a normal state of the right lung, the breathing being, however, rather more intense (puerile) than in health. On the left side the percussion sound was quite natural in front, and good vesicular breathing was audible. Such, likewise, was the case all over the scapular region behind; but at the base of the lung, all about the region to which he referred his pain, a decidedly dull sound was elicited by percussion. Now, this dulness of percussion may arise, as you know, either from an effusion of fluid between the pleural membranes, or from a thickened state of pleura, or from a condensation or such other alteration of the lung as prevents its free distension by air. When fluid is interposed between the pleuræ, the vibrations excited in the lung by the voice are not propagated to the wall of the chest, unless in cases where some old bands of adhesion serve to connect the surface of the lung to the costal pleura. In the present instance, the vibrations were sensible to the hand over the dull surface, and, therefore, we had to seek for some other cause for the dulness, besides pleuritic effusion.

There was no history of any former attack of pleurisy; therefore it was improbable that there could have been any thickened state of pleura. We found, however, a decided modification of the voice and breathing, which sufficiently accounted for the dull percussion. There were both bronchophony and bronchial breathing. Both these conditions occur only in a solidified state of lung; and when accompanied by viscid, rusty sputa, and the train of symptoms which we found in our patient Mills, we have no hesitation in referring the solidification to the effusion of plastic matter into the air-cells of the lung, which likewise serves to exclude the air from them.

The seat of the effusion of plastic matter in pneumonia is in the fine air-passages within the lobules of the lung, the inter-lobular passages being free. The air, therefore, in inspiration, rushes through these tubes; and the vibrations which it excites on the walls of the tubes are easily propagated by the solid lung to the surface, and thus the phenomenon of tubular or bronchial breathing is heard—a sound similar to that which one may cause by simply blowing into a tube, or of which you may get a natural example by applying the stethoscope over the larynx and trachea in the neck.

And in bronchophony, it is as if the vocal sounds were generated in the air-passages—the voice seems to come from the lung. The fact is, that the vibrations excited at the vocal chords in the larynx are propagated along the walls of the bronchial tubes; and instead of being diffused through the soft spongy lung, as in health, they are conducted in full force to the thoracic wall by its solidified portion.

You must not lose sight of the fact, that bronchial breathing and bronchophony are present wherever a part of the lung is solid, whatever be the cause of the solidification, provided only a great portion of the bronchial tube is pervious. Thus it is that we often find these signs when tubercular deposit has solidified a greater or less portion of lung. Sometimes pneumonia, running an insidious and

chronic course, will make the lung solid, and develop these signs; or cancerous deposit may have been slowly taking place. To determine, then, the exact signification of these signs, you will have again to call in the aid of the history of the symptoms of the case.

You may have bronchial breathing when a slight pleuritic effusion has taken place; but such bronchial breathing will be accompanied, not with bronchophony, but with œgophony—a state of voice resonant and bronchial in its character, but rendered bleating by the interposition of a thin layer of fluid between the costal and pulmonary pleura. The existence of this modification of voice, and the simultaneous absence or great diminution of the usual vocal vibration, when the hand is applied closely to the wall of the chest, will distinguish the bronchial breathing which is accompanied by pleuritic effusion, from that which is due to the simple condensation of pneumonia.

Thus, then, the percussion which we first practised on making our physical examination of the chest directed us to the seat of the lesion; and from the bronchial breathing, the bronchophony, the rusty expectoration, the local pain, and embarrassed breathing, and the febrile disturbance, we diagnosed with confidence and certainty that the lower lobe of the right lung was in a state of inflammation, and had passed rapidly into hepatization. It is probable, too, that the inflammation of lung was accompanied by some degree of pleurisy. Of this, however, we had no certainty; but three circumstances rendered it probable; 1st, because the local pain was sharper than it usually is in pneumonia; 2dly, because on one day the bronchophony was decidedly œgophonic in its character; and, 3rdly, because pneumonia but rarely occurs without some degree of pleurisy affecting the pulmonary layer of the pleura.

The portion of lung involved in the inflammation was rather more than one-third of the posterior part—the inferior third; and the inflammation extended half way, or possibly two-thirds forwards, towards the anterior surface of the lung. This was also the case in the second example of this disease which I shall bring before you to-day.

It is a remarkable feature in the clinical history of pneumonia, how prone it is to attack the lower part of the lung, and how much more frequently the posterior part is affected than the anterior, and how often the inflammation involves only a portion of one lung, and that portion not exceeding one-third or one-half, not often reaching to the anterior surface, and seldom extending to the entire lung. I know of no satisfactory explanation of its partiality for the posterior and inferior part. Perhaps dependence of position, as likely to affect the circulation, may have something to do with it. The extent of the inflammation, and, perhaps, in some degree, its position, ought always to be taken into account in forming a prognosis. If only a portion of one lobe is affected, recovery is much more frequent than the reverse, if the treatment has not been of a too depleting nature; should the whole of one lobe be involved, or more than half the lung, the chances of recovery are much diminished; and, should the inflammation engage the whole of one lung, the disease is very frequently fatal. When the pneumonia is seated in the upper lobes, the chances of recovery are much less than when it occupies the lower lobe. This is partly because when the disease attacks the upper lobe it is of a more asthenic nature, and partly also because this part is most apt to be affected in old persons. The clinical fact is highly deserving of your attention, and ought to exercise an influence upon your treatment.

Treatment.—Now, the treatment to which this patient, and the other whose case I shall presently detail, were subjected, consisted in the free application, to the back and side over the region of the dulness, of flannels soaked in warm spirits of turpentine, which were kept on for half an hour. These stupes were applied at three several periods of the day for the first three or four days. They excited considerable irritation and redness of the skin. At the same time a diaphoretic medicine was administered, consisting chiefly of the liquor ammoniæ citratis, of which as much as six drachms were given every three or four hours; at the same time an occasional dose of a mild aperient medicine was given, and the patient was allowed a pint of beef tea daily, with a little milk and bread.

Let us see, then, the progress of the case under this treatment.

The patient, you will remember, came in on the 5th of January, which, reckon-

ing from the date of the first appearance of rigor and pain, was the third day of the disease.

On January 6, he was much the same as on his admission. Pulse 96; respiration, 36.

On the 7th, a small patch of herpes was noticed at the right angle of the mouth. Pulse 90; respirations, 36. A decided crepitation is heard at the end of each inspiration, although the breathing remains tubular; sputa abundant and less viscid.

On the 8th,—pulse, 80; respirations, 40;—the dulness on percussion less extensive; the returning crepitation is now audible over the whole of the region of inflamed lung; fever less; tongue cleaning; the pain in the side being troublesome, ten leeches were applied.

Jan. 9th, (seventh day of the disease).—The pain much relieved; bronchial breathing completely relieved by crepitation. Pulse, 96; respirations, 30.

On the 10th, the skin moist and soft; sputa no longer rusty; crepitation audible on deep inspiration, and the voice slightly resonant beneath the scapula. Pulse, 90; respirations, 32.

On the 12th, crepitation being still present, a blister was applied to the side; and, on the 13th, it was reported that the breathing was nearly pure, crepitation having almost disappeared. Pulse, 68; respirations, 28.

On the 17th, fourteen days after the first seizure, our patient was quite convalescent.

Case 2.—The second case is that of a lad named Mimms, aged 17, a waiter at a coffee-house. In his vocation, he is a good deal exposed to cold, but his health has always been very good. His illness commenced on February 8th, with shivering, loss of appetite, cough, pain in the right side, and vomiting. In this case, the signs were of the same character as the former, but were situated in the lower part of the right side. There was similar acceleration of pulse and breathing. The percussion was dull over the lower part of the right lung behind, where also there was a total absence of vocal vibration. In other parts of the chest the breathing was pure, and the percussion resonant.

Let me remark here, that, in watching cases of acute chest disease, it is very important to note the frequency of the pulse and respirations, as furnishing one of the most useful guides in the progress of the case; when matters do not go right, you find the frequency of the pulse and breathing increase from day to day, or remain stationary; but if, on the other hand, you find a gradual fall in the frequency of the pulse and breathing, you may feel sure that your patient is making satisfactory progress.

These physiological signs are not inferior in importance to any afforded by the patient in the course of his malady; and you may even trust to them alone, when they take the favourable course, to assure you, in the first instance, that the disease is not extending itself, and afterwards, that the inflammation is being resolved.

The diagnosis of this second case differed from that of the first in this,—that, inasmuch as, in addition to the dulness on percussion, the usual vibrations excited by the voice were not felt when the hand was applied to the chest, there must have been fluid interposed between the lung and the pleura, to prevent their propagation to the walls of the chest; whence we concluded that a slight pleuritic effusion accompanied the hepatization of the lung.

The progress of this case, under the same treatment as that applied to the first, was equally satisfactory.

Thus, he came in on the 10th of February, on the third day of the disease; his pulse was then 118; his respirations, 36.

On the 11th, the pulse was 128; respirations, 34.

On the 12th (the fifth day of the disease), we find the pulse still high, 120; and the respirations, 40. There was, however, a manifest improvement in the physical signs. The vocal vibration was now to be felt, showing that the pleuritic effusion had been absorbed. Slight crepitation began to be audible near the base.

On the 13th, the pulse had fallen to 96, but the respirations were still as high as 42.

On the 14th, the seventh day of the disease, the pulse had fallen still lower, and, what was more important, the frequency of the breathing was reduced to 32;

crepitation was now distinctly audible over the whole of the diseased portion of lung.

On the 18th, the crepitation had become much larger and moister, and a good deal of vesicular breathing was audible at the lower part of the lung; and on the 17th (the tenth day of the disease), all traces of crepitation had disappeared, and the dulness on percussion had diminished; the pulse was 78, and respirations 29.

Four days afterwards the patient left the hospital, quite restored to health.

Here, then, are two cases which I think you may take as examples of pneumonia, or, more correctly, of pleuro-pneumonia, of an average amount of severity. They were by no means of what is commonly called the asthenic or typhoid kind. The first, indeed, was distinctly sthenic; and the patient was a strong, athletic, muscular man, just such a one as you might bleed without much hesitation. The other patient was not of so vigorous a frame; but still, neither his constitution nor his symptoms were such as would have justified our regarding the case as asthenic.

Yet you will observe, that, in the first case, the inflammation was fairly undergoing resolution on the seventh day of the disease, and, on the eleventh day, the lung was in its natural condition; on the fourteenth day the patient was convalescent. In the second case, resolution was fairly established likewise on the seventh day of the disease, and on the fourth day of the treatment; and pure breathing was audible on the tenth day. A fortnight, likewise, was sufficient to restore this patient to complete convalescence. It is remarkable, that, in both cases, the resolution should have taken place on the same day of the disease; but then it must be noted, that, in both, the treatment began on the same day, namely, the third from the seizure.

Now, I have brought these cases before you as good illustrations of the progress of the disease under a mode of treatment which I have found most successful in a considerable number of cases, both in hospital and private practice. This mode of treatment differs very considerably from that laid down by some of our best authorities as that which ought to be pursued in pneumonia. I have described in what that treatment consists. But I am quite prepared to hear it objected, that such a treatment is really doing nothing but leaving the disease to take its own course. Well, and if that course be to recovery in a short time, and at no expense to the powers of the patient, can we adopt any plan better suited to him? But I do not admit that the frequent application to the chest of such counter-irritants as mustard or turpentine (three or four times a day), and large doses of the acetate or citrate of ammonia, and occasional purging, exercise no influence, either upon the whole system or upon the local disorder. The drugs cause, undoubtedly, and especially when the patient is kept in bed, free sweating or free diuresis, and often both; and it is quite consistent with all experience, that frequent counter-irritation exercises a beneficial influence on internal inflammation, and relieves pain. I prefer the frequent application of such stimulants as mustard and turpentine to that of blisters, as being quicker, and, on the whole, more efficacious and less weakening.

Now, in the particular cases under consideration, a manifest check to the advance of the disease took place immediately the treatment was begun, and the signs of resolution followed very speedily, and I have already alluded to the curious fact, that the resolution in both cases was established on the same day of the disease, the treatment having likewise commenced on the same day—a fact which seems very much to indicate that the treatment had a good deal to do with the early resolution of the inflammation.

Now, in estimating the value of this or that mode of treatment in any given disease, we should ascertain what are its natural tendencies—to recovery or to death. Is it a very fatal disease? When recovery takes place, what is the process? When death occurs, what are the immediate antecedents, and what are the immediate causes?

These are points of clinical history, upon which our returns are, as yet, far from being complete or exact. The numerical returns which we have respecting this disease are unsatisfactory, because, in these returns, all cases of pneumonia, whether asthenic or otherwise, and whatever be the quantity of lung involved in the inflammation, are classed together. Suppose you were making inquiry respecting the results of treatment in cases of burns, how little information could you derive

from numerical returns, if the cases were not classified according to the extent of surface involved in the burn? It is just so with pneumonia; we have as yet no classified returns; but, looking to general experience and such numerical returns as we have, it may be stated, that, as in burns, pneumonia is fatal in proportion to the extent of pulmonary surface involved; but that, in the cases where one-fourth or a less portion of lung is inflamed, it has on the whole a very decided tendency to recovery. On the other hand, when all one lung is involved, or when a considerable extent of both lungs is engaged, the tendency is decidedly to a fatal result.

The fatality of pneumonia, too, is very much influenced by the period at which the disease may have been detected, and some kind of medical treatment adopted. Thus, Grisolle's tables show that, when cases were brought under treatment within the first three days, only 1-13th died; but if not brought in before the fourth day, 1-8th died; if on the seventh, 1-3d; on the eighth, so large a proportion as ½ died. Age, likewise, exercises an important influence, and there can be no doubt that (excluding infancy, respecting which our facts are of the most satisfactory nature) the mortality increases with the age; and at the advanced periods of life pneumonia must be regarded as a very fatal disease.

There are those who think, that when pneumonia affects the apex of the lung, it has a more fatal tendency than when it affects the base. I myself lean very much to this opinion, and because (without referring to complication with tubercles), in such cases, the disease is generally of the low or typhoid character; nay, under such circumstances, the pneumonia may be erratic, and, like erysipelas, pass from one to another part of the same lung.

It may, indeed, I think, be laid down, that in all these cases, the pneumonia has a fatal tendency in proportion as it tends to exhaust, whether by its extent or by the vital powers of the patient too readily succumbing, or by the exposure to cold, or by mental or bodily exertion during the early stages of the disease, or by some powerfully depressing influence connected with the original exciting cause of the disease.

But if you take cases of pneumonia occurring in persons in the full vigour of life, and not involving a very large portion of the lung, and coming under treatment early, we may regard it as a disease of not very fatal tendency, but rather very prone to get well when the vital powers of the patient have not been too much depressed; and such cases will get well whatever be the treatment early adopted, provided no great error has been committed in either direction—either in that of stimulating too freely, or of reducing too much. What we have to do in such cases is, to adopt the treatment which favours the shortest convalescence, and in the more severe cases we have to discover a mode of treatment which will promote the reparative process and uphold the powers of life.

The plan of treatment which has been recommended by some of our highest authorities, I need not tell you, is that by bleeding and tartar emetic. You bleed early from the arm, and, if necessary, you bleed a second or a third time; and if under this treatment resolution does not speedily take place, you bleed locally by leeches or by cupping, and likewise give tartar emetic more or less freely; to all which counter-irritation may be superadded in the more advanced stages.

I have had ample experience of this treatment; and I must confess, that that experience has so little satisfied me with it that I have for some years ceased to adopt it; for, under this treatment, I have seen too many die; and when recovery has taken place, in too many instances has it been with a tedious, lengthened convalescence. Indeed, of all the fatal cases which it has fallen to my lot to witness, the great majority have been treated in this way; and in most of them antiphlogistic treatment had not been carried to an excessive or unreasonable extent.

In bleeding, the difficulty is to determine how much blood you may safely take away. Upon this point, I think all who view the matter candidly must acknowledge, that we have no satisfactory rule, notwithstanding the immense experience we have had of the practice. A loss of blood, which scarcely makes an impression on one man, will seriously reduce another; or a patient, who in former illness has borne bleeding well, will suffer from it very much on a subsequent occasion; or losses of blood which were borne with impunity in one epidemic are injurious in another. All these are difficulties against which the greatest tact and judgment

find it difficult to contend. And although in particular cases relief may be afforded to certain symptoms by a timely bleeding, there is no doubt that in many it exercises no real influence in checking the progress of the disease; for, notwithstanding early bleeding, the lung becomes fully hepatized.

And as far as regards tartar emetic, I have long noticed that patients do best when the drug neither sickens nor purges. On this subject, I am glad to fortify my own opinion, formed independently, by those of two such excellent authorities as the late Dr. Thomas Davies and Dr. Watson. Dr. Watson, alluding to Dr. Davies, says; "He states, and this is accordant with my own experience of the remedy, that the tartar emetic always acts best when it produces no effect except upon the inflammation; *i. e.*, when it does not cause vomiting, or purging, or a general depression of the powers of the system." When, indeed, you can insure your patient against these effects of the drug, it is a very safe and useful remedy in pneumonia; but the difficulty is to limit its action in this way. This may be done entirely as regards its depressing effects, by combining opium with it, and the combination often exercises a very good effect.

I had asked myself, why does this combination of tartar emetic and opium often tell so favourably in pneumonia? and the conclusion which I came to was this,—because it tends very decidedly to promote sweating, and perhaps other excretions; and I was thus led to try drugs of a like tendency, such as the liquor ammoniæ citratis or acetatis, in large and frequently repeated doses, which do not exercise any depressing influence upon the patient. In pursuing the treatment, you must be careful to give full doses—six or eight drachms—and to repeat them every three or four hours; and you must diligently apply, two or three times a day, or more frequently, counter-stimulants over a large extent of the surface of the chest, such as mustard, or large flannels soaked in warm spirits of turpentine. With this you may safely and with advantage combine the use of opium, with or without calomel; and now and then a mild aperient will be necessary.

Under this treatment, deaths from pneumonia have become extremely rare among my cases. The fatal cases are those of patients who come in far advanced in the disease, or in whom the disease has rapidly invaded a large surface of one or both lungs; but even such cases often do well under this treatment, combined with support and stimulants.

In all the cases, I am careful to give support from the first, in the shape of animal broths in small quantities, and at short intervals, and sometimes a small amount of stimulus.

In the decidedly typhoid cases, I need scarcely say, that the free use of stimulants is of essential service; and it is often of immense advantage to give quinine freely, the special indication for this latter drug being profuseness of sweating.

Pneumonia often comes on in connexion with rheumatic fever, or in a highly rheumatic or gouty diathesis. Such cases bear ill the bleeding and tartar emetic system, but are particularly well suited for this plan which I now recommend to you, and in them opium may be freely used with very great advantage.

I had almost forgotten to allude to a very interesting point which we observed in both cases, viz., that during the stage of hepatization the chlorides had disappeared almost completely from the urine, but returned to it on the re-appearance of large crepitation, and on the resolution of the inflammation. This curious piece of chemical history was first pointed out by Redtenbacher, who records the results of his observations of it in eighty cases in 'Hibra's Zeitschrift der K. K. Gesellschaft der Aerste.'

I forbear from any further remarks on this subject because my friend Dr. Beale is engaged in repeating the experiments, and with other observations on the chemistry of the sputa and of the blood in pneumonia, which, I have no doubt, will, ere long, furnish us with some very interesting results.*—*Med. Times and Gazette, May* 15, 1852, *p.* 483.

* That I am not singular in feeling much dissatisfied with the bleeding and tartar emetic treatment in pneumonia, I infer from the fact, that this mode of treatment has been, as I am informed, quite given up at the great Clinical Hospital at Vienna. The curious paper of Varrentrapp, of Frankfort, in 'Henle's Zeitschrift,' which I did not see till long after this lecture was delivered, indicates that that able physician had no particular liking for the treatment in question. Varrentrapp adopted the treat-

24.—ON TOPICAL MEDICATION IN THE TREATMENT OF DISEASES OF THE MUCOUS MEMBRANE OF THE AIR-PASSAGES.

By Dr. Horace Green, New York.

[Dr. Green, after alluding to the discussions excited by the introduction to the profession of the above mode of treatment, and the objections which were then made as to its facility or safety, says:]

When, in 1840, I brought before the Medical Society of New York the subject of the treatment of diseases of the larynx, by means of the direct application of therapeutical agents to the lining membrane of this cavity, and asserted the safety and utility of their employment, the proposition was received by a very large proportion of the profession with entire incredulity, many of them declaring that "to apply topical remedies below the epiglottis was an anatomical impossibility." It was soon found, however, that topical medication was a method of treatment most appropriate to certain forms of laryngeal disease; and thinking, practical men were not slow to adopt a plan that was found feasible and successful in the management of these affections. Consequently, such a mass of testimony was soon accumulated on this point, that the most incredulous were obliged to admit the practicability and the benefit of the operation. But when, in the publication of my work on "Diseases of the Air-passages," in 1846, the statement was made that when tracheal disease existed, the sponge-armed probang could be passed, ordinarily, without difficulty, through the rima glottidis, down to the bifurcation of the trachea, and that the operation in my hands had been repeatedly performed, the "old fogies" of the profession were again shocked and alarmed; the possibility of this operation was positively denied, and, in unmeasured terms, "Young Physic" was abused for having suggested such "unwarrantable and dangerous innovations in the practice of medicine." Still, those physicians who had succeeded in passing the instrument into the glottis ventured, in cases of aphonia, or in ulcerations of the tracheal mucous membrane, to push the sponge through the glottic chink into the trachea, and down into the bifurcation; and it was found that this operation was not only facile and safe, but one of the greatest advantage in some of the above conditions of disease. The question, therefore, of the practicability of this operation was no longer a mooted point, and I can assure the gentlemen of the Medical Society of London that I have succeeded in passing an armed probang down to the bifurcation of the trachea, probably over five hundred times; and this has been done in the presence of half that number of medical men, all of whom, if required, will give their testimony to the fact. In no case have I seen any injury arise from the operation.

In most cases, however, of disease of the laryngo-tracheal membrane, it is only necessary to pass the sponge into the larynx; for the contraction of the glottis, which takes place on the introduction of the instrument, presses the fluid from the sponge, which trickles down, and is diffused over the tracheal membrane. But whenever ulcerations of the tracheal membrane exist, I have found it exceedingly advantageous to pass the sponge, saturated with a strong solution of the nitrate of silver, along the whole length of the tube. In cases where I have had reason to believe that ulcerations of the membrane had extended below the bifurcation, I have employed a probang nearly straight, armed with a sponge, and have pushed this instrument, not only down to the division of the trachea, but, turning it aside, *have passed it at will, in many instances, into the right or left bronchus, with as much ease and safety as the catheter is introduced into the bladder.*

[That there may be no doubt as to the feasibility of the operation, Dr. Green relates the following cases which were performed before several medical men.]

In January, 1849, Mr. A., a young clergyman from Canada, who was suffering from laryngeal phthisis, came under my care. He had been affected for several years, and was much emaciated. A very troublesome cough, which was attended by a constant expectoration of pus, was present. Complete aphonia had existed

ment of pneumonia by the frequent inhalation of chloroform in small quantity, but not to such an extent as to cause insensibility. The most frequent immediate effect of the treatment was pomplimion and reduction in the frequency of the pulse. The results of the treatment appear to have been highly favourable. An able analysis of Varrentrapp's paper was published in the 'Medical Times, Vol. XXIV., 1851.'

for more than a year. On examining his throat, the epiglottis was found much thickened, and its border serrated with ulcerations. Topical medication, with appropriate general treatment, was employed. Applications of the nitrate of silver were made, first to the epiglottis, then to the larynx, and subsequently through the rima glottidis into the trachea. Under this treatment the patient improved rapidly; the cough and expectoration diminished; and after a few weeks of treatment there seemed to be present but little indication of disease in the larynx or trachea. Still some degree of cough remained, and the aphonia was as complete as in the commencement of the treatment.

All along the patient had complained of a sore spot directly under and below the right clavicle, and this remained after the improvement I have mentioned had taken place. Believing that ulceration existed in the bronchial division at this point, I determined to reach it with the caustic applications. Selecting a long and nearly straight probang, and directing the head of the patient to be thrown well back, I passed the instrument into the trachea, and carrying it down to the bifurcation, turned it a little to one side, and pushed it nearly two inches into the right bronchus. On withdrawing the sponge, it was found covered with pus; and Mr. A. remarked that "the right spot had been touched for the first time." This operation was repeated daily for several days; and as soon as the ulceration at this point had healed, which took place after eight or ten applications to the part, the voice of the patient, which for a twelvemonth had been lost, was restored.

I have this day, (June 8th,) in the presence of two physicians, the one a practitioner in this city, and the other from Ohio, passed the sponge-probang, wet with a solution of nitrate of silver, of the strength of forty-five grains to the ounce of water, through the trachea, and quite two inches below its bifurcation. In this case the patient is himself an intelligent physician, and no doubt whatever existed in his mind, or in the minds of those present, as to the nature and extent of the operation.

In the 'New Hampshire Journal of Medicine' for April, 1852, is the history of a case, reported by Dr. E. R. Peaslee, professor of anatomy, &c., in Dartmouth College, which well illustrates the *capacity* of the human larynx to receive foreign bodies of considerable size into its cavity. The details of this case, which is one of great interest, are given at length by Professor Peaslee; but I will only allude with much brevity to the principal points in the case. The patient, who was a well-made, robust man, aged about forty-four, having lost the cartilaginous and also a part of the bony septum of the nostrils, from a scrofulous affection, was in the habit of introducing a piece of moistened sponge into the nasal passages several times a day, to remove the fœtid secretion produced by the still progressing disease just mentioned.

On the 23rd of July, 1850, while applying the sponge as usual, he accidentally let it slip from his fingers, and it passed back at once through the posterior nares. A paroxysm of coughing, with considerable dyspnœa, at once ensued; and Dr. Peaslee, being hastily sent for, saw the patient a few minutes after the accident occurred. He at once passed his finger into the pharynx, expecting to dislodge the sponge; but failing in this, and being assured by the patient that he felt the sponge lower down in the œsophagus, he explored that part with the long curved pharyngeal forceps, and thus ascertained that it was not in the pharynx at all. On questioning the patient as to the precise size of the sponge, he declared to Dr. Peaslee that it was "as large as a half a hen's egg." As he was a man of accurate judgment, and was positive as to its size, and moreover as his breathing became easier, and his cough ceased almost entirely, Dr. Peaslee assured the patient that if his estimate of size was correct, it was "almost an anatomical impossibility," that the sponge could be in the trachea, for if there, the air could not pass so freely to and fro in that tube as it did at that moment. Still supposing that the sponge was lodged in the œsophagus, or had passed into the stomach, an emetic of ipecacuanha was administered, which removed the contents of the stomach, without dislodging the sponge. But the difficulty of breathing at once returned, and the patient declared he could again feel the sponge at the bottom of the pharynx. An œsophageal bougie was now obtained, and passed slowly into the stomach, without encountering the least obstruction, excepting a very slight impediment which was met with for a

moment just before the instrument slipped into the stomach. But the patient again breathed quietly, and said, "now I can feel it in my stomach."

Dr. Peaslee being obliged to leave his patient to fulfil a consultative engagement with a physician residing in a neighbouring town, left directions that his colleague, Dr. Crosby, should be immediately called, if the dyspnœa and cough returned. During the afternoon and following night, the paroxysms of dyspnœa and cough returned several times; the respiration became more difficult, and Dr. Crosby was called in, who, after passing the bougie into the stomach, without finding the sponge, concluded, with Dr. Peaslee, that it must be in the trachea; its precise location, however, could not be ascertained by placing the ear over the trachea or chest, but as the respiratory murmur was found to be diminished throughout the whole of the right lung, and as this side was also less distended on inspiration than the other, it was concluded that the sponge was at length engaged more especially in the right bronchus. The necessity of practising an operation was now quite apparent, and it was determined to perform it about ten o'clock on the morning after the occurrence of the accident.

The incision was made into the trachea by Dr. Crosby, in the manner ordinarily practised in this operation. The hemorrhage was very profuse, and being drawn freely into the trachea, at each inspiration, "filled the tube from the sponge up to the incision, and thus completely asphyxiated the patient." It was quickly removed, however, by Dr. Peaslee, and an attempt made, with a long forceps, to remove the sponge, but the mass was so firmly impacted that great difficulty was found in accomplishing it. The first and second attempt brought away, at each time, only small portions of the size of a pea, but the third removed the whole mass, as it was supposed at the time. After its removal, the usual means for exciting the respiratory movements were employed, when the patient at length breathed, and in a few minutes was able to answer questions. But the hemorrhage again returned some hours after the operation, filling up the trachea, and obstructing respiration; and although it was several times removed from the tube, yet the patient became comatose and died fifty-three hours after the operation.

The respiratory organs only were examined. The *larynx* was well proportioned, but in no respect abnormal. The *trachea* was inflamed throughout. "A patch of inflammatory exudation just above the bifurcation, equal to about a square inch in extent; imbedded in which, and upon the left side, was a piece of sponge about the size of a common white bean, and so adherent as to detach the membrane when removed."

In concluding, Prof. Peaslee thus remarks—"This case finally settles the question—if anybody still has any doubt—of the possibility of passing a sponge through the rima into the trachea, in the treatment of tracheal disease. The sponges used by Dr. Horace Green for that purpose, are about half an inch (generally less) in diameter. The one I actually removed was more than fourteen times as large as one of these; and the whole mass at first was at least *fifteen or sixteen times as large*.

On measuring the mass of sponge removed by the operation, it was found to be even larger than the patient had said. "Another piece cut out as a fac-simile of it, but found on accurate comparison to be somewhat thinner and *smaller*, is, when moistened, one inch and three-quarters long, one inch and a quarter wide, and fifteen-sixteenths of an inch thick; all this in addition to three small pieces detached from the original, as before said."

It is quite time that the medical profession generally should be made better acquainted with the very great advantages which may be derived from an appropriate combination of topical with general remedies, in the treatment of many forms of disease of the respiratory passages.

Not only in chronic, laryngeal, and bronchial disease, but in membranous croup, in asthma, œdema of the glottis, and in the earlier stages of *tubercular phthisis*, topical medication has proved in my hands, not only palliative but *curative*, in many instances, in all these varieties of disease.

I am fully aware of the clamour many in the profession are ever ready to raise at the bare suggestion that any plan of treatment will prove remedial in the last-named disease; but, after a long and quite extensive experience in the treatment of

diseases of the air-passages, I am fully confirmed in the opinion, that in many instances of tubercular affection, complicated with, or preceded by, follicular disease of the pharyngo-laryngeal membrane—and such cases are much more numerous than the profession are generally aware of—we have it in our power to arrest the disease by the persevering employment of topical measures conjoined with appropriate general treatment.—*Lancet, Sept.* 18, 1852, *p.* 259.

25.—ON THE TOPICAL TREATMENT OF ACUTE INFLAMMATION OF THE LARYNX AND TRACHEA.

By Dr. Eben Watson, Professor of the Institute of Medicine in Anderson University, &c., Glasgow.

[Dr. Watson first endeavours to explain the modus operandi of a solution of nitrate of silver on an inflamed mucous membrane. He says:]

There is a little experiment, simple, and easily repeated, which is familiar to all who have paid attention to the recent advances made in our knowledge of the inflammatory process, and which presents us with an excellent occasion for observing the action of the solution of nitrate of silver, in the different stages and degrees of that morbid state. I refer to the excitement of inflammation in the web of a frog's foot stretched out under a microscope. When, for example, a red-hot needle is passed through the web, the following are the phenomena observed:—A spot in the centre of the inflamed part is sphacelated, destroyed by the passage of the needle through it; a circle round the spot is usually found in a state of complete congestion, the vessels being dilated, and the corpuscles almost perfectly stationary within them, and in the part beyond this circle the vessels are not so much dilated, and the stasis of their contents is not so complete. The stream is seen passing slowly away in the collateral circulation of the unaffected parts of the web.

Now these two circles represent two degrees of inflammation, which it is important to distinguish wherever they occur, and, perhaps, especially when the seat of morbid action is the mucous membrane of the larynx or trachea. That part of the web of the frog's foot in which the stasis was complete represents the most intense, or sthenic degree; the other, in which the stasis was not so complete, represents what is usually called the sub-acute, and perhaps chronic, varieties. And the effects of the solution of caustic on each of these parts are markedly and importantly different. In the part which is most intensely inflamed, the solution, in the direct ratio of its strength, increases the stasis of the blood within the vessels. The latter seem to be unable to dilate further, and are, therefore, little changed, but the nitrate of silver acts through the coats upon the blood which they contain by causing its partial coagulation, and, likewise, by withdrawing water from the serum for the crystals of the nitrate which begin partially to form if the solution is strong. In that part of the web, on the other hand, which had been less intensely inflamed, the stimulant solution causes renewed and increased dilatation of the blood-vessels, and the retarded current moves on in them more freely than before; a cure being thus speedily effected if the exciting cause of the inflammation has ceased to act.

That precisely similar degrees of inflammation occur in the mucous membrane of the larynx and trachea with those just described as artificially produced in the frog's foot, I need hardly attempt to prove, for it will be at once admitted that there are three kinds of acute laryngitis; one, in which no false membrane is formed; a second, in which a false membrane is formed, but in which the pharynx, as well as the larynx, is affected, viz., the diphtherite of French writers; and, lastly, that intense local inflammation of the larynx and trachea, accompanied by exudation, to which in this country we generally restrict the term "croup."

1. The first kind varies in its intensity from the most trivial catarrhal irritation to a severe inflammation of the whole thickness of the mucous membrane lining the windpipe. It very often commences about the fauces and passes downwards, causing cough more or less croupy in its character, difficulty of breathing, and hoarseness of voice. It is accompanied by fever of greater or less intensity, and its chief physical signs are, increased loudness of the respiratory sounds in the larynx and trachea, with occasionally a whistling sound, from the absence of the

natural mucus of the part, and from partial spasm of the glottis. This kind of laryngitis is more frequently complicated with bronchial inflammation than with pneumonia, and as the patient sinks from non-aëration of the blood, the most prominent symptoms of the laryngeal affection gradually give way, and it is often difficult after death to detect more than a slight redness of the bronchial mucous membrane. The inflammation sometimes, however, terminates in œdema glottidis, and but rarely in the exudation of a false membrane.

I have mentioned the chief features of this kind of laryngitis, first, because it is very common in its slightest degree, and is by no means rare, even in its utmost severity; and, secondly, because it is not usually a very sthenic disease, or, to speak more correctly, it does not present so very high a type of inflammation as that which is characterized by lymphatic effusion, and is, therefore, an example of that degree of this morbid process comparable to the outside circle in the inflamed portion of the frog's foot. The proof of this lies in the absence of exudation,—the usual complication being bronchitis, not pneumonia,—the longer duration of the disease, and its frequent termination in serous effusion into the glottis, or by passing into the chronic form of laryngitis.

It will be expected, then, that the solution of caustic should act well in such cases, and so it does; but perhaps in none is a greater amount of discrimination necessary in the adaptation of the strength of the solution to the severity of the inflammation which may be present, as well as in choice of the proper time for commencing the topical measures. For it must not be thought that I advocate restriction to any one remedy, local or general, in the treatment of this disease. In the severer forms of the affection especially, depletion of some kind will at first be necessary to check the violence of the inflammation, and an emetic will be useful in restoring the moisture of the mucous surface. It is after the use of both these remedies that the topical application is alone admissible, nor can it even then be employed to the exclusion of other means. In children it will be especially necessary to repeat the emetic several times during the progress of the case, and in very few will the judicious practitioner refrain from the use of counter-irritation to the outside of the throat while he is proceeding with the topical treatment internally. It is, however, with the latter that I have specially to do at present, and therefore to the management of it I shall, in a great measure, confine my remarks.

Contrary to what might, *à priori*, be expected, the result of those experiments I before alluded to is, that the more intense the degree of inflammation of the laryngeal lining, the weaker ought to be the solution of silver applied to it. In those cases in which the intensity of the inflammation has never been great, or in which, as is more likely to happen, the primary violence of the disease has been subdued by other treatment, a stronger solution may be used with advantage. Its first effect, when thus judiciously applied, will be to coagulate the albuminous film upon the surface of the membrane which has been stripped of its epithelium, and thus to cover and protect it. Another, and almost simultaneous effect, is to stimulate the basement membrane to form new epithelium, and to secrete new mucus, and thus the artificial film of coagulated albumen is by-and-by replaced by a more natural covering, and the surface is lubricated by its appropriate moisture. If, then, a renewal of the morbid process could be prevented, a cure would already have been accomplished, but this is seldom or never the case. The good effects of the topical application wear off in a few hours, and the former abnormal phenomena may even in that time have re-appeared in nearly equal severity. The treatment must therefore be continued—the touching of the larynx must be repeated frequently for some days, and indeed until all the symptoms of laryngitis have completely disappeared.

In some severe cases of this kind, especially in adults, there is great danger of a chronic thickening of the laryngeal mucous membrane being left behind, and of the voice being thus permanently impaired. It may, therefore, in such cases be a very good precaution to give a little mercury towards the end of the acute attack; but whenever the mouth begins to be affected, the topical application of solution of caustic must be stopped; for the laryngeal lining, especially at its upper part, is then far too vascular and irritable to bear the touching, and its only effect would be to cause still greater excitement of the part. It is for this reason chiefly, and because I put considerable faith in the topical remedy, that I should recommend

the mercurialization to be postponed until the termination of the acute stage. After the mercury has had its required effect, it is often a good plan to repeat the topical treatment for a time, when its efficiency will be found very great in restoring the tone of the voice, and fitting the patient to bear a change of his apartment in the first place, and, ere long, removal to the country.

2. Regarding the second kind of laryngitis, viz.—that which forms part of the diphtherite of Bretonneau, I have little to say, not having met with the affection in practice. It seems generally to be connected with an atonic state of the general system; the whole fauces, the gullet, and the stomach itself, are often affected at the same time, and in the same way, as the lining of the air-tubes. The exudation, which in these cases occurs after a short stage of intense erysipelatous redness, consists almost entirely of albumen, and covers the whole of the parts affected, sometimes in considerable thickness. It is, therefore, in many respects different from the more local, firmly adhering, lymphatic exudation of true croup.

This seems to be a common affection on the Continent, especially in Paris, and also in New York according to Dr. Horace Green, who tells us that a solution of caustic acts admirably as a topical application in such cases. It seldom, however, occurs in this country, at all events in this city, except as an occasional, and happily rare, form of epidemic.

3. True exudative croup is altogether a different disease. It appears in very sthenic conditions of the general system; the blood is invariably rich in fibrine and corpuscles, and the exudation which forms in the larynx and trachea always contains, and is sometimes chiefly composed of, fibrine. It is, moreover, a purely local affection, seizing at once on the larynx or trachea, and confining its chief violence to one or both of these organs. It is, besides, more frequently complicated with pneumonia than with bronchitis—another proof that the degree of inflammation present is very intense, and to be compared with that which exists in the web of the frog's foot around the puncture of the red-hot needle. And my experience of the effects of the solution of caustic, in cases of croup, justifies this comparison, and confirms the important inference that such treatment is unsuitable for the degree of inflammation present in them; for I have always found the symptoms of congestion in the laryngeal lining, such as pain and difficulty of breathing, increased by the application of even a weak solution of nitrate of silver, and the very act of applying the solution is hurtful in these cases; the sponge generally brings away part of the false membrane upon it, and leaves the delicate and highly vascular tissue beneath exposed, and often bleeding. Pain, anxiety, and, I fear, increased exudation, and sometimes ulceration, are thus produced, the original disease being thereby aggravated.

To show that I have not been too easily led to these conclusions, and to give force and point to what I believe to be a very important statement, I shall relate the two following cases, which I venture to think interesting in many points of view, and which I have, therefore, selected from my case-book. One of them illustrates the action of the topical application in an adult case, and the other in that of a child.

Case 1.—The subject of this case was a gentleman past the middle period of life, and, before the illness which I am going to describe, particularly strong and healthy.

One evening of the winter before last he was suddenly seized with difficult respiration, tightness in the throat, harsh, dry, whistling cough, and high fever. All the symptoms of croup, indeed, became very soon but too well marked; and, a few hours after the apparent commencement of the attack, the following were the physical signs which presented themselves:—The number of respirations in the minute was much increased, and yet the feeling of oppression on the chest remained unabated, so incomplete was the inflation of the lungs; indeed the respiratory murmur was but feebly heard in the upper parts of the chest, while the bronchial sounds were dry and snoring in their character. In the trachea the inspiration was long, and accompanied by the harsh sound of the air passing along the dry and narrowed tube. A little higher up, and chiefly at the commencement of inspiration, the glottis was heard vibrating so as to occasion a stridulous sound.

When the patient spoke he suffered great pain, and increased feeling of anxiety.

His voice was feeble and broken, being at times deeper, and then suddenly much slighter, than his ordinary tone.

There could, therefore, be no doubt that this was an instance of acute tracheal croup, accompanied by exudation. It was treated as such, by emetics, purgatives, hot baths, bleeding, antimony, and calomel, with a blister on the trachea, and in the evening I commenced to apply a solution of twenty grains of nitrate of silver in an ounce of water to the interior of the affected organ; but each application gave great pain and uneasiness, and increased the sense of suffocation. The violent fits of coughing which were thus produced undoubtedly occasioned the separation of small portions of the false membrane, but that was no improvement, since the surface thus exposed was tender, unprotected, and often bleeding. I next followed Dr. Horace Green's example, and increased the strength of the solution twofold. This, however, only made matters worse, and indeed the patient himself began to dread the repetition of the proceeding. Still my faith in the remedy was not completely exhausted; I determined, before abandoning the topical treatment altogether, to use a weak solution of the nitrate of silver; I therefore diluted it to ten grains, and ultimately to five grains, in one ounce of water, and yet I was unsuccessful. It was, indeed, too apparent to me that the larynx was not in a state to bear either the stimulant solution, or the presence, for however short a time, of the sponge by which it was applied; I therefore gave up the topical treatment entirely at this time, and used more ordinary measures. The patient was still further depleted, and more decidedly mercurialized. He was likewise frequently blistered during the next month, by the end of which time he was much improved, but still had a good deal of hard, whistling cough, dyspnœa when he moved about, and great pain when he spoke, referred to the glottidean region. The tone of voice was weak, but not unusually hoarse.

The most careful examination of the chest still showed that the lungs were free from disease. The respiratory sounds in the trachea were loud, harsh, and dry, and were accompanied by a pretty constant râle, as if there were one or more valvules of exudation matter still adhering to the walls of the trachea. The vibration of the glottis in breathing and coughing was not so free as formerly, indicating a degree of œdema of the organ.

On opening the mouth, the fauces were seen to be red and swollen, and the epiglottis was felt by the finger covered with soft and doughy mucous membrane.

After careful consideration of all these circumstances, it was determined, in consultation with my father, that two caustic issues should be opened, one on each side of the thyroid cartilage; that the iodide of potassium should be administered in decoction of sarsaparilla; and that I should again apply the caustic solution to the interior of the larynx and trachea, now that the inflammation had passed the acute stage. Under this plan of treatment the patient made daily advances towards health, and was soon able to take exercise out of doors wearing a respirator.

The effects of the topical treatment during this latter period were as manifestly beneficial as formerly they had been hurtful. The strength of the solution was at first only ten grains to the ounce of water, but was gradually increased to a scruple in the same quantity. After each application the patient found that in a short time his breathing was freer, his cough less frequent, and his voice stronger; but this improvement at first lasted only about forty-eight hours, at the end of which period the application was always renewed with the good effect of sustaining the improvement. By-and-by, however, the intervals were lengthened with impunity; the gentleman spent the summer at the coast, and is now perfectly well.

I think it worth mentioning, in conclusion, that I still see this gentleman occasionally for a feeling of dryness in the throat, which nothing but the stimulant application seems to relieve. This appears to be a very common state of matters after the caustic solution has been applied to the throat for any length of time. Hence I now and again see a number of my old laryngeal patients who have been cured of all their symptoms with the exception of this feeling of dryness, and it is often both intense and annoying. I believe the most of them would disregard it were it not for the fear of a relapse into their former state, and I therefore encourage them to forget it if possible, and to use such means as rubefacient liniments exter-

nally, or some simple gargle. Still it must be confessed that no remedy for this disagreeable feeling is so effectual as the solution of caustic, and if it be not too strong, and if the intervals of its application be not injudiciously short, I do not think its continued use in the cautious manner just indicated will do any injury to the mucous membrane.

But to return from this digression; the case which I have narrated proves, as clearly as any single case can prove, that the topical treatment is unsuitable during the acute stage of exudative croup: and, were it not for the inconvenient length to which it would protract my paper, I could relate many others, the subjects of which were children, and which all go to corroborate the above conclusion. I have in these cases invariably seen good reason to stop the topical treatment if I had begun to use it early in the disease, because I found that it retarded, if it did not prevent, their favourable progress. One of the most marked of the cases to which I allude was the following, and I relate its chief features here because it is the last case of acute exudative croup in which I have used, or intend to use, the solution of caustic.

Case 2.—The patient was a girl, four or five years old, attended by my friend, Dr. Peter Stewart, of Eglinton-street.

This little patient was suddenly seized with symptoms of acute croup, about the middle of last winter. Dr. Stewart was immediately called in, and at once instituted the most judicious measures to check, if possible, the untoward progress of the malady. Among other things he applied a solution of caustic to the pharynx and upper part of the larynx.

Unfortunately, however, as sometimes will and must happen, under the best treatment, the patient's state rapidly became worse, and Dr. Stewart requested a consultation with my father; and a doubt occurring to the former that possibly he might not have passed the probang fair into the larynx, he likewise asked me to see his patient and apply the solution of caustic for him.

The child had been about forty hours ill when I saw her, and was evidently in a most dangerous condition. The exudation was very abundant in the trachea, as evinced by the sharpness of the inspiratory sounds heard over it, and by the faintness of the vesicular murmur in the lungs; the glottis, however, vibrated during coughing and speaking, and was, therefore, free of œdematous swelling. The pulse was quick but not feeble; the surface of the body was hot and moist, and the face was of a dingy hue, the lips being almost livid.

I introduced the probang, the sponge of which had been moistened with a solution of twenty grains of caustic in an ounce of water, so easily through the rima glottidis, that I feel quite convinced that Dr. Stewart, who is in the daily habit of using this plan of treatment in many other cases, especially in hooping-cough,* had likewise reached the seat of disease, and that there had been a fair

* This mode of treating hooping-cough was originally proposed by myself in the 'Edinburgh Monthly Journal of Medical Science' for 1849, and is slowly, but I trust, surely gaining confidence both with the profession and with the public. For the explanation of the theory of this mode of treating hooping-cough, I refer to my original paper; but I hope the following numerical results of the practice will not be uninteresting to the readers of the 'Dublin Quarterly.' M. Joubert, of Cherion, has used the topical treatment in sixty-eight cases of hooping-cough, with the following results (see the Bulletin de Therapeutique for January, 1852; and also the Edinburgh Monthly Journal for May, 1852, p. 257).

A speedy cure resulted in	40 Cases
Great relief, and shortening of the disease, occurred in	20 "
No change was effected in	8 "
Total, . . .	68

The cases of this disease which I have myself treated, from beginning to end, in this way amount at present to 57, in all of which a more or less speedy cure was effected, as the following statement will show:—

31	Cases were cured in from 10 to 14 days.
26	" " 3 to 4 weeks.
57	

Combining these two Tables, we have, in the first place, 125 cases of hooping-cough treated in this manner without one death. Only 8 out of the whole number resisted the treatment; of the rest, 78 were speedily cured, and 39 were greatly relieved and shortened. What better proof can be asked of the efficacy of the topical treatment of hooping-cough; and what now prevents its general adoption by the profession? Am I not warranted in believing that were it so adopted much suffering would be saved and many lives would be prolonged beyond the first, the most interesting, but perhaps also the most dangerous, epoch of human existence?

trial of the topical treatment in this case from the commencement. I repeated the application thrice during my first visit, and Dr. Stewart renewed it again in the evening. At my second visit, next morning, I used a stronger solution, viz., one of forty grains to the ounce of water. After each application the child seemed a little easier, perhaps from the passage being partially cleared by the sponge and by the child's own efforts, but she always became worse in a very short time; and although all the ordinary means had been used during the whole progress of the case, besides the topical measure, still the child's state was evidently becoming very hopeless. The pulse was more rapid, but not as feeble as might have been expected, and the colour of the skin was much more dingy—indeed it was almost livid. The child died that evening, and, I regret to add, that no inspection of the body was permitted.

In this case the failure of the topical treatment was far too marked to occur in any one's practice without exciting very serious reflections regarding its employment in the disease of which it was an example, and it led me to look back to my notes of other similar cases, as well as to institute some such experiments as that which I formerly narrated. The results of these observations and reflections have been to convince me of the total unsuitableness of the treatment in question to acute cases of exudative croup.

But I may here be met with the objection, that if, in my cases of croup, the topical method was unsuccessful, a very different result ensued in Dr. Horace Green's cases. This impression, however, will not, on examination, be found to be so correct as many may be inclined to think. Nor is it, in my opinion, detracting from Dr. Green's merit to hold that it consists in having effectually directed attention to the general subject of topical applications to the interior of the larynx rather than in recommending that treatment in cases of croup.

Dr. Horace Green illustrates his little work on croup by thirteen cases. He may possibly refer to others throughout the work, but these are the only examples fully related, so that they can be judged of independently by the reader; hence they are carefully numbered so as to permit of easy reference. Of these thirteen cases, two are quoted from Mr. Ryland's work on the larynx, chiefly for the sake of the account given by that author of the morbid appearances after death. In these, of course, the topical treatment was not used, so that the cases which illustrate this treatment given by Dr. Green are reduced to eleven. Nor am I convinced that these were all cases of true exudative croup; nay, I think it is certain they were not; for No. V. was a mere hoarseness, and No. VIII. was a spasmodic affection of the glottis which came and went without any symptom of croup at all. Nos. II., VII., and X., were apparently cases of acute œdema glottidis, leaving only six cases, the symptoms of which resemble those of croup. Even some of these six have more the characters of diphtheritis than of croup; and in one of them (No. XIII.) the affection followed measles. In only four of the six cases was the disease fully developed, and of them one-half died. But, supposing that all the eleven cases related in this book were really cases of croup, more or less severe, I do not think the mortality among them, viz., three deaths in eleven cases, was less than it generally is in the ordinary run of croupy cases occurring in the better ranks of life, and treated in the usual way; and therefore it follows that Dr. Green's experience, so far as we have it in his work on croup, does not show that his success in the treatment of cases of that disease was increased by his using the topical applications to the interior of the larynx; for he very properly used other measures as well, and the result has been a mortality not at all less than if he had neglected the topical treatment altogether. I consider it no small corroboration of my opinion, in regard of this point, that M. Trousseau states in the 'Union Médicale' for 1851, No. 100, as one reason of his superior success of late years in the treatment of severe cases of croup, that he has discontinued the application of a strong solution of caustic to the larynx and trachea, which he used formerly to insist upon.

The termination of acute inflammation of the laryngeal mucous membrane, whether that inflammation had been of the simple or of the exudative type, in œdema of its loose subjacent tissue, is an event so remarkable and important that I have reserved until now the few remarks which I wish to make on its topical treatment. I believe that the occurrence of the lesion referred to is by no means infre-

quent, and that it is always attended with imminent danger to the patient's life. The rapidity with which the inflammatory stage sometimes terminates in this manner is sufficiently remarkable to have struck every one who has observed cases of the kind. In some of these it is the result of constitutional debility, however that may have been produced; while in others it seems referrible to a peculiarity in the nature of the morbid process itself. In the former class of cases it generally arises during the progress of some exhausting disease, such as typhus fever, or towards the end of exudative croup itself, when it is always a formidable and often a fatal complication. And even when it occurs as a more primary disease, the inflammation of the mucous membrane appears to be reduced in intensity by the very occurrence of the serous effusion, although it had previously been even of the exudative type. From what has been formerly stated, then, regarding the action of a solution of caustic applied to a subacutely inflamed mucous membrane, it might, *à priori*, be expected to produce a beneficial effect on the œdematous glottis; and this expectation has been remarkably fulfilled in my experience, as the following instance will sufficiently exemplify.

Case 3.—A young child, of eight months old, had severe hemorrhage from the gums after division of them over the incisor teeth, and in the exhausted state which followed, he caught cold, and became affected with the ordinary symptoms of croup, which were chiefly combated by an emetic, counter-irritation over the throat and chest, and by repeated small doses of calomel. But very soon the chief, nay, only symptom became that of impeded respiration. The child's efforts during inspiration, the dry, whistling sound which accompanied it in the trachea, the nearly total absence of vesicular murmur in the lungs, and the short expiratory sounds, taken along with the previous state of the little patient, rendered it evident that œdema glottidis had occurred; and if to this it be added that the pulse was feeble, the patient pale and exhausted, and that he could hardly be made to receive nourishment,—his extreme danger will not be questioned.

I introduced the probang down to the glottis, but not through the rima, owing to the swelling of its margins. The strength of the solution used was thirty grains to the ounce of water, and it was applied three or four times at short intervals. The effect was soon apparent. Some coughing, and the expulsion of tough mucoalbuminous matter first followed, and then the child became quiet; the breathing was freer, although, of course, there was still considerable obstruction at the glottis. In a few hours, this obstruction seemed to be increasing, and the application of the caustic solution was again renewed in the same way, and with equally favourable results. The calomel was continued, and a warm water enema was administered, after the action of which the child took the breast, and slept for a short time. The future progress of the case was marked by a gradual but steady improvement. The calomel was soon stopped, the bowels were duly regulated, and the topical applications were persevered in daily for two or three weeks, by the end of which time all obstruction to the breathing, as well as the cough, and even a degree of hoarseness which had latterly been observed, had completely disappeared, and the child's general health rapidly improved.

[In another case of an infant, only two months old, to which Dr. W. was called, the symptoms at first appeared only those of a slight cold, but which gradually assumed a frightful degree of intensity. Dr. Watson touched the glottis with a strong solution of caustic, which assisted in expelling a quantity of ropy mucus, and relieved the respiration. After a purgative enema, and a tepid bath, the touching was repeated with manifest improvement; only four or five repetitions were necessary, and the child was well in a few days. Dr. Watson then continues:]

On reviewing the whole subject, then, the following are the principal conclusions to which my observations, experimental and clinical, have conducted me:—

1st. The solution of the nitrate of silver, when applied to an inflamed mucous membrane, acts differently, according to the intensity of the inflammation that may be present; in the asthenic varieties it operates as a stimulant of the capillaries of the part, and likewise of its secreting apparatus, while in the sthenic variety it increases the congestion of the membrane, chiefly by diminishing the fluidity of the blood in its vessels.

2nd. In acute laryngitis, in which there is no false membrane, and probably in

diphtheritis, in which there is an albuminous exudation, the local application of solution of caustic, varying in strength inversely in proportion to the intensity of the inflammation, may be employed with more or less speedy benefit.

3rd. During the violence of true exudative croup, the stimulant application to the part affected is injurious, but when the disease begins to yield to antiphlogistic and other treatment, it may assist in the cure.

4th. Œdema glottidis, whether occurring as a primary disease, or as a complication of other morbid states, is always speedily relieved, and in some cases effectually cured, by the application of strong solutions of the nitrate of silver to the œdematous organ.

And 5th. It follows as a corollary, derived partly from the foregoing conclusions, and partly from the results of my experience of the topical treatment communicated to 'The Dublin Quarterly Journal' in November, 1850, that the solution of caustic acts beneficially in only one, viz., in the asthenic variety of laryngeal inflammation: for it matters not whether such has been the original character of the affection (acute but asthenic cases), or whether it has become so under the combined influence of time and general treatment (chronic cases).—*Dublin Quarterly Journal, August*, 1852, *p.* 48.

26.—*Topical Medication of the Larynx.*—Dr. Cotton brought under the notice of the Medical Society of London a new method of applying a solution of nitrate of silver, or any other substance, to the laryngeal mucous membrane. After making a few remarks upon the practice of introducing a piece of sponge *within* the larynx, which he believed to be not only practicable, but, in the majority of cases, useful, and always with proper precaution, harmless, he had, nevertheless, become convinced, from a number of experiments at the Consumption Hospital, that it was better merely to drop the solution into the laryngeal opening. This was easily accomplished by means of the simple instrument he presented to the Society, which was made by Mr. Coxeter, and consisted of a pair of forceps slightly curved, and having a small piece of sponge attached to one of its blades. By depressing and slightly drawing forwards the tongue by the ordinary spatula, the extremities of the blades might be held over the larynx, and at the proper moment the contents of the sponge should be squeezed into it. Dr. Cotton had used it successfully in a considerable number of cases, and had found that it was generally less disagreeable to the patient, and produced less spasm and cough, than the ordinary method of passing down the sponge itself; whilst it possessed the obvious advantage of making it impossible that the sponge could ever fall into the larynx, the closing of the forceps effectually holding it. The sponge would contain about half a drachm of fluid, nearly the whole of which might, if desired, be applied to the laryngeal membrane and its neighbourhood, the cough which invariably followed its use always ensuring its diffusion.—*Lancet, June* 26, 1852, *p.* 617.

27.—*New Mode of applying Medical Solutions to the Larynx.*—Dr. Theophilus Thompson exhibited to the Medical Society of London an instrument which he is accustomed to use for the purpose of making applications to the interior of the larynx. It is a syringe having a small glass cylinder and a silver tube, slightly curved, and at its extremity expanded into a globe about the third of an inch in diameter, perforated all around with numerous very small apertures. The piston rod is surmounted with a ring, into which the thumb can be introduced, so as to work the instrument steadily. The tongue of the patient being held down with a spatula or with the finger (whether the epiglottis can be seen or not), the extremity of the tube is readily introduced, and the solution injected. The condition of larynx in which Dr. Thompson finds most occasion for this instrument, are those which are benefited by the nitrate of silver; and he usually employs about half a drachm of the solution recommended by Dr. Horace Green, containing two scruples in the ounce of water. Dr. Thompson remarked that patients and practitioners seemed agreed in the impression that advantage is derived from such

an application, and he considered this mode of introducing it less rough and disagreeable than the curved probang with a sponge at the extremity, as used by Dr. Green, and more precise in the direction of the fluid than the forceps, having one blade armed with a sponge, as ingeniously contrived by Dr. Cotton. Dr. Thompson was indebted for the suggestion to Dr. Boott, who mentioned to him having seen in an American newspaper the notice of a syringe employed for the same purpose by Dr. Asa Warren, of Boston.

Dr. Ogier Ward said that some time ago he had contrived a syringe similar to the one exhibited by Dr. Thompson, but he had not made it public.—*Lancet, June* 19, 1852, *p.* 594.

28.—*Cauterization of the Glottis in Hooping Cough.*—M. JOUBERT has published the results of his experience of this mode of treating hooping cough. He has treated in all 98 cases in this manner, but he excludes 30 of these as not being worthy of reliance. The remaining 68 cases he divided into three series, according to the period at which the treatment was commenced. Of these, the general results were, that in 40 the cure was rapidly effected, in 21 a marked relief was experienced, and in 7 cases only the treatment failed altogether.—*Provincial Med. and Surg. Journal, May* 26, 1852, *p.* 278.

29.—*Tannin in Hooping Cough.*—DR. v. BREWNING employs tannin in the following combination, in cases of hooping cough:—℞. Tannini, gr. 1-6th; acid. benzoic, extract. belladonnæ, utrq., gr. 1-12th; pulv. rhei, gr. iij.; pulv. gumm. acaciæ, gr. xij. M. fiat pulv. The powder may be given three or four times a-day. For a very young child, half the dose twice daily will be sufficient. In a few days the severity of the symptoms usually diminishes, and the character of the attack changes. If the *primæ viæ* require clearing, an emetic dose of antimonial wine should be first administered. If the disease does not yield in a few days, and the periodicity of the attack is well marked, one or two grains of hydrochlorate of quinine [The disulphate would, doubtless, be equally efficacious.—ED.] may be substituted for the rhubarb. He recommends as a domestic remedy, the simultaneous use of a tea of the flowers of the common primrose, with equal parts of inspissated crab-juice and sugar-candy.—*Provincial Med. and Surg. Journal, Sept.* 15, 1852, *p.* 483.

30.—ON THE TREATMENT OF CROUP BY WARM VAPOUR AND EMETICS.

By DR. WILLIAM BUDD, Physician to the Bristol Infirmary.

[Before entering on the treatment of this disease, Dr. Budd makes a few observations on some cardinal points in the morbid anatomy and pathology of two specimens taken from fatal cases of the disease.]

In both specimens, a concrete, dirty-white exudation lines the windpipe from the epiglottis downwards, covering the chordæ-vocales, blocking up the sacculus laryngis, and forming a tough, continuous, tubular membrane. In passing down the windpipe, it becomes gradually less and less tenacious, until at length it passes into mere mucus, a little above the bifurcation of the air-tube. It is important to observe that, in the same direction, the false membrane becomes less and less adherent to the surface on which it lies. In the lower part of the trachea, in these specimens, it floats loose and detached, while in the larynx it adheres so closely that it cannot be stripped off entire. So that, by a sad fatality, the morbid product is the harder to dislodge the narrower the channel it serves to obstruct. This is, I believe, always so; and the fact is one, I need scarcely say, of very great importance in many ways.

Pursuing your examination, you will trace the same false membrane extending by direct continuity over the fauces and velum, and passing thence into the posterior nares. These are its limits in the specimens before you. But cases occur, not

unfrequently, in which it extends, by direct continuity also, on the one hand down the gullet to the cardiac orifice of the stomach, and, on the other hand, into the minutest ramifications of the air-tubes. In an opposite extreme it is sometimes limited to the larynx itself, covering scarcely more than a square inch of membrane.

Although identical in nature, the morbid product is apt to vary in extent, therefore, in different cases. Dr. West has remarked, that "the false membrane is much oftener found in the larynx than in the trachea, and that it is in both much more frequent than in the bronchi." My own experience entirely coincides with his. The membrane would appear to be first formed in the fauces and larynx, and only to be developed on the remainder of this wide mucous tract by extension of the morbid process. It is a singular circumstance, and one which could not fail to be of great interest, could we see its true significance, that when the disease penetrates to the lung, it often affects the tubes of the right lung exclusively, the false membrane passing down the right bronchus, and leaving the left untouched.

The histological and other characters of the exudation itself are very important. If you examine a portion of the false membrane under the microscope, you will see that it is essentially made up of cells or corpuscles lying in a granular blastema. These cells bear, as you will remark, a very close resemblance to the common pus-corpuscle. Pus-corpuscles are, in fact, as I have endeavoured to show you at greater length elsewhere, none other than these same cells, dead,—most probably in a higher state of oxidation, and otherwise chemically altered. Here and there, however, a stray cell is seen, marking by its fusiform shape a tendency to rudimentary but abortive development.

The most important character of the blastema in which the corpuscles are imbedded, is the large number of fat-granules it contains. The presence of this large quantity of fat in the morbid product, besides presenting another point in common with pus, is probably connected in some way with its low capacity for organization.

These characteristics are constant in the false membrane of croup. They are also occasionally met with in inflammatory exudations from other surfaces; especially in such as occur under direct exposure to air, or as the effect of malignant poisons,—or, in weak and cachectic persons, whatever the cause of inflammation. Such exudations have, in fact, received the epithet of *croupal*, in testimony of this likeness to the croupal type.

As a group, they are especially characterised by a proneness to degenerate into pus, and other kindred fluid products, with a tendency to the development of corrosive, and, in some cases, of still more noxious qualities.

This close affinity of the exudation to pus is, in croup, a character of great moment; since, in virtue of it, a product, which was at first solid and adherent, and firmly choking up the air-channel, may, by a slight change of conditions, give place to a fluid secretion, offering no serious mechanical obstacle to the ingress of air, or to its own expulsion. In cases of recovery, some such secretion always supersedes the croupal, and is, in fact, the chief instrument of that separation from the surface beneath which prepares the way for its ejection.

The condition of the mucous membrane itself varies much in different cases, and in different stages of the disease. As a general rule, it presents less vascular redness than is seen in other forms of inflammation of the same degree. Of this, two different explanations have been offered. One, that the gorged capillaries are relieved from their distension by the outpouring of the effused lymph; the other, that they are choked up with white products of the same nature as the exudation itself. Which of these explanations is the true one, or whether either adequately represents the fact, I will not pretend to decide.

Besides being inflamed, the larynx and under surface of the epiglottis are generally found fretted and ulcerated, and a similar but still more extensive destruction of substance often affects the tonsils also. These alterations are, in great part, the result of the corrosive action of the morbid product. The material of the false membrane is no sooner poured out than it becomes the seat of catalytic changes, which being communicated to the living membrane (whose power of resistance is lowered by disease, and whose elements are already prone to dissolution), lead to its disintegration. Direct exposure to air, the presence of suffi-

cient moisture, and the heat of the underlying, diseased surface, all concur to give activity to these chemical changes in the morbid product.

So much, then, for the local changes in croup. If you consider their very definite character, as well as their limitation to a particular tract, you will see at once that we have to deal with a disease of a very special nature. The almost exclusive occurrence of this form of croup in very early life, and, still more, its occasional epidemic prevalence, are facts which admit no other view.

Bearing this in mind, you will not, therefore, take every case of catarrh which may happen to be attended with croupal hoarseness, to be a case of genuine croup, and still less will you confound with the disease before you, that equally specific form of inflammation of the same surface which frequently occurs in the adult, under the name of croup, and which is, in fact, nothing more than erysipelas affecting a mucous membrane.

I draw your attention to these distinctions, not only because they are important to prognosis, but because a knowledge of them is essential to the appreciation of the effects of treatment in any given case.

After this account of its morbid anatomy, it is almost superfluous to add, that this disease of the windpipe is one which derives almost all its importance from situation. As a disease of a mucous membrane, it is often trivial enough; but, as mechanically hindering the ingress of that wonderful agent which quickens the flesh with living powers, croup extinguishes life in its very source.

The mode in which death is brought about, is painfully interesting to watch. In the language of technical writers, it occurs by asphyxia.

Perhaps no greater error *can* be committed in the treatment of this disease than persevering too long with lowering measures. The whole effort of contending with the impediment which obstructs the breath, falls on the muscular force, and the issue in death or recovery may depend on the strictest care and economy of that feeble remnant of it, which, in obedience to a blind, but irresistible impulse, is still struggling on in the interest of the other powers.

The time during which the struggle for life is maintained in fatal cases, depends much, of course, on the greater or less rapidity with which the air-channel is blocked up, as, also, in some measure, on the degree of muscular power of the patient.

[Dr. Budd then discusses the treatment, the two primary objects being first to promote the separation and expulsion of the false membrane; and, secondly, to prevent the re-formation of it. It struck Dr. Budd that both these objects would probably be found in the suitable modification of the atmosphere breathed by the patient. Dr. Budd observes.]

There is, indeed, much reason to believe, that the effect of air, and especially of the oxygen it contains, in keeping up inflammation (itself a process of rapid oxidation), in already diseased parts, as well as in exciting inflammation in parts whose power of resistance to common chemical agency is, through some cause, lowered, is only beginning to be appreciated.

Yet there would seem to be little doubt, not only that this agency of the air is most large and influential, but that a knowledge of it furnishes a principle fertile in applications as well to the cure as to the prevention of the disease.

As the air is more injurious the colder it is, it naturally occurred to me, that the first object in the treatment would be to raise the temperature of the air breathed by the patient to a suitable point. The second was to saturate the air thus warmed with watery vapour. On many grounds, indeed, it seemed to me not improbable, that—whether by modifying the physical constitution of the false membrane itself—or, perchance, by promoting a more serous secretion beneath it, or in both ways at once—the moisture thus generated might specially aid in the separation and expulsion of the morbid product, and possibly also prevent its being formed anew.

It is for more enlarged experience to say to what degree these important objects are likely to be realised by these simple means.

The results we have as yet obtained are perhaps too few to build upon securely. Nevertheless, as far as they go, they surpass the best expectations that could have been formed of this method of treatment. If they warrant nothing more, they at least encourage to a further trial of it.

The mode of proceeding was simple enough. The sick child was placed in a bed, closed on all sides by a double curtain. Into this bed was introduced a large earthenware pan nearly filled with all but boiling water; and into the water was plunged from time to time, a heated brick, for the purpose of disengaging steam, care being taken to have the brick completely submerged. By this means, the atmosphere within the curtain was constantly kept at a temperature of from 75° to 80° Fahr., and surcharged with vapour. Where it was practicable, the mother was placed in the bed with the child in order to reconcile it to the strangeness of its situation. As convalescence approached, this was on several occasions found to be a useful precaution.

The only other measure adopted, was to give an emetic from time to time, whenever the struggle for breath seemed more than commonly urgent. Not, however, for the sake of the antiphlogistic effect of the antimony or other agent employed, but to help, by that mechanical succession which the act of vomiting causes, and which daily experience shows to be so effectual for this end, in the expulsion of the morbid product. This is the great and paramount use of emetics in the treatment of croup, and it is one the more to be valued, *since there is no substitute for it.*

Having entered at such length into the motives which led to the adoption of this plan, it only remains for me to relate, with as much brevity as I can, the results obtained by its employment.

Case 1.—Edwin Poole, a fine robust child, two years and a half old, was brought to the Bristol Royal Infirmary, on the 15th March, 1851. He had been suffering from severe cold for about a week, but, from the mother's account, it was not until the morning of the 15th, the day of admission, that decidedly croupal symptoms had set in.

On his arrival at the hospital, at about four p.m., his state was already very urgent. The distress of breathing was extreme; the face was livid and bloated, the respiratory murmur scarcely audible. It was plain that the ingress of air into the chest was all but intercepted.

Now and then, in a paroxysm of still greater distress, actual suffocation seemed to be impending. The breathing was loud and stridulous; the cough croupal and characteristic. A layer of white exudation, which visibly coated the velum and fauces, left no doubt as to the nature of the laryngeal obstruction. The pulse 130 in a minute. The only favourable circumstances in the case were, that the heat of the surface still kept up, being in fact rather above than below the natural standard, and that the respiratory muscles still contended vigorously against the impediment which opposed the entrance of air through the windpipe.

As soon as the child was placed in bed, an emetic was administered, two leeches were applied to the top of the sternum, and ten grains of bicarbonate of potash in solution were ordered to be given every half hour.

At five o'clock, as he was growing rapidly worse, two other leeches were applied to the throat; and the fauces, and as far as it could be reached, the larynx, also, were freely "swabbed" with a saturated solution of nitrate of silver.

These measures were, like the former, followed by no relief, and at half past five, when I saw the child for the first time, he was still growing steadily worse. The breathing had become still more difficult, and the lividity deeper.

As three children, who were admitted in much the same state, and treated by the common methods, had lately died in the house, I determined in the present case to make trial of the plan already described.

The child's bed was accordingly converted into a vapor bath, and he was ordered to have an emetic every four hours. The strength to be supported by good broth, as need might be.

From the moment of beginning to breathe the new atmosphere, the child began to mend. At the end of two hours the change for the better was very striking.

The breathing was much easier and less stridulous, and the lividity of countenance had much diminished. Many hours of tranquil sleep were obtained through the night.

The emetic was administered two or three times, and on each occasion the vomiting was attended by the expulsion of distinct flakes of false membrane.

At one p.m. the following day every alarming symptom had disappeared. The

breathing had become much more free, and there was not the slightest shade of lividity remaining.

The inspirations were 28, and without labour; the pulse had fallen to 98; the cough had become loose, and had almost entirely lost its croupal character.

In the evening of the same day, he was so well as to be sitting up in bed at play with his toys.

From this time his recovery was rapid and uninterrupted. The vapour was continued for another day, and for two other days the child was kept in close curtains, a precaution which, from the well known tendency to relapse in croup, it was thought desirable to repeat in all the other cases.

On the 21st the child was discharged cured.

In the next case, the course of the disease was slower, and the distress was at no time so urgent as in that just related.

Case 2.—John Winchester, 22 months old, was admitted to the Bristol Infirmary on the 30th March, 1851, labouring under croup. An attack of measles, which occurred about two months before, had left him weak and cachectic, and he was already on the books as out-patient, for the treatment of cancrum oris affecting the gums of the lower jaw.

A cough, like that of a common cold, which had existed about a fortnight, had, within the last week, gradually put on a croupal character, and, at the same time, the breathing had become more and more difficult.

At the time of admission, the symptoms of croup were fully developed. The cough was characteristic, and the breathing, which was loud and stridulous, was extremely difficult. A distinct false membrane lined the fauces and velum. The complexion, however, was not very livid as yet. The surface hot, and pulse 125. Sibilant and other catarrhal noises were audible over the chest.

The same treatment was adopted as in the former case, and with exactly similar results.

Immediate relief followed the employment of the vapour, and, in the course of six hours, all alarming symptoms had disappeared. Distinct flakes of false membrane were expelled after each emetic, with great relief to the breathing.

On the first of April, the breathing was quite free and natural; the cough had become loose, and had entirely lost its croupal character. The symptoms of croup proper had, in fact, disappeared, and only those of catarrh remained. For the treatment of this, and to recruit his general health, he continued in the house until the 17th of April, when he was sent out cured.

Case 3.—Arthur Cross, a fine boy, two years old, was brought to the hospital on the 6th of April, 1851.

In the middle of the night preceding, he was seized suddenly, and without assignable cause, with hoarseness, croupal cough, and extreme difficulty of breathing. On admission, all the symptoms characteristic of croup were fully developed, and the case was considered to be very urgent. The same treatment was employed as in the two former instances. On the morrow, all urgent symptoms had yielded, and the child was convalescent. On the 10th of April he was discharged well. (May, 1851).

Since the occurrence of these cases, seven other instances of croup have come to my knowledge, in which the employment of vapour, in the manner already described, formed the principal part of the treatment. Of these seven patients, two only died. In the five others, recovery was rapid, and the employment of vapour was uniformly followed by great and immediate relief.

Of the two fatal cases, one may fairly be put out of the field, as being beyond all hope of remedy when first seen; he died, in fact, within three hours of being brought to the hospital. When admitted, he was already comatose, and a violent attack of convulsions soon followed. On dissection, the false membrane was found to extend down the right bronchus into the minutest air-tubes of the right lung, and nearly the whole of that lung was in a state of collapse, and impervious to air.

The other case did not, at first, appear quite so desperate. The symptoms of croup had, however, existed in great severity three whole days before admission, and, when the child was brought to the hospital, he was already growing drowsy, and the heat of the surface was fast failing. With every act of inspiration, the

sternum and sternal cartilages were drawn so deeply in, that it was plain but little air could pass into the chest, Some transient relief seemed to follow the employment of the vapour, but the child died about twelve hours after admission. Two leeches were applied to the top of the sternum, and emetics were not given. —*Med. Times and Gazette, June* 19, 1852, *p.* 611.

31.—*Chlorate of Potass in Croup.*—[The following cases are related by Mr E. F. Sankey, of Beckley, Sussex, in corroboration of Dr. Budd's paper on croup.]

E. B., aged one year and three months; croup and bronchitis. After treating with blisters, salines, and ipecacuanha, which relieved the urgent symptoms, I found him very much reduced, and the circulation very languid, the blood not properly supplied with oxygen. I then remembered having attended a case of pneumonia in an infant (in consultation), when the chlorate of potash was exhibited with a favourable result. I therefore tried it in this case, and with the same happy end.

J. P.; three years; croup. This child was leeched and treated with calomel, salines, and ipecacuanha. After these remedies, the chlorate of potash was employed, and the change in his breathing, and the hue of his countenance, was most marked after the first dose. In neither case did the quantity used exceed a drachm and a half altogether.

I am aware, Dr. Pereira states, that this salt is found unaltered in the urine of those patients who have taken it, therefore no oxygen is given to the system; but I think a portion of it, at all events, must be decomposed, otherwise how is the alteration in the appearance, from the dusky leaden colour to the rosy healthy tint noticed in these cases, to be accounted for?—*Med. Times and Gazette, July* 24, 1852, *p.* 98.

32.—*On the Oil of the Gadus Carbonarius, or Black Pollack.* By Dr. Bagot. —[Dr. Bagot introduces this oil as a substitute for cod-liver oil, from which it is impossible to distinguish it in its physical properties. It was first brought under his notice by a gentleman of the name of Sinclair, of Mountcharles, county Donegal. Dr. Bagot remarks.]

I believe we are as yet in our infancy with regard to the number of those oils which may be used with advantage, and the administration of even the cod liver oil requires more attention than is generally supposed, and its effects should be closely watched by the physician, who should give it in small doses, with occasional intermissions, to prevent that derangement of the digestive functions which so frequently follows its exhibition. In conclusion, I may remark, that some intelligent patients of mine said that the oil of the *gadus carbonarius* was less disagreeable to the stomach than some of the oils procured at the best establishments in Dublin; and a young medical friend of mine who had tried it with two patients, had heard from them the same observation.

Dr. Benson said, that so far as he had an opportunity of testing the medicinal value of this oil, he could speak favourably of it. Having received a quart of it from Dr. Bagot, he selected three of the most intelligent of his patients who were then using the cod-liver oil, and gave them this new oil instead, directing them to take it at the same times and in the same quantity as the other. These all expressed themselves well pleased with it. They scarcely perceived any difference either in its immediate effects on the stomach, or on the progress of their diseases, which were different forms of phthisis pulmonalis. Dr. Benson said that of course this quantity was too little to enable him to speak decidedly about it. It ought to be tried with a greater number of patients, and for a much longer time than this lasted. But when he gave to the same patients, by way of experiment, similar doses of sweet oil and very nice linseed oil, their stomachs soon rebelled, and their progressive improvement was checked. Good trotter oil, however, was borne by the stomach pretty well, though not quite so easily as

the oil now presented. He therefore considered that Dr. Bagot deserved well of the profession and the public in introducing this oil to the notice of the Society.

Dr. Jacob observed, that there was no reason in the world why this species of cod might not afford the oil of the requisite quality as well as any other; indeed, the probability was that many, if not all, oils obtained from livers of fish, possessed medicinal qualities. Even the sun-fish oil, as it is called in commerce, obtained from the liver of the basking shark, might be valuable in this respect. Dr. Bagot's announcement he considered very important and well deserving of attention.—*Dublin Med. Press, June* 30, 1852, *p.* 401.

33.—*New Stethoscope.*—Mr. B. W. Richardson exhibited to the Medical Society of London a new form of stethoscope which he had recently invented. With reference to conveyance of sound, this stethoscope did not differ from other kinds, but it was much more portable and convenient. The improvement lay in the ear-piece, which was joined to the tube by means of a very simple hinge-joint, on the principle of the joint used in the enema syringe, so that the ear-piece could be folded down upon the tube when not in use, (like the top of a round table,) and could then be carried in the breast-pocket without causing the slightest inconvenience. The joint was also so managed that the instrument could be used with the ear-piece standing at different angles, an advantage of some importance.—*Lancet, June* 5, 1842, *p.* 544.

DISEASES OF THE ORGANS OF DIGESTION.

34.—ON AN ERYSIPELATOUS AFFECTION OF THE THROAT.

[By Dr. R. B. Todd, F.R.S., &c.

[Dr. Todd relates this case because it is a rare one, and seems to have escaped the notice of systematic writers.]

The patient is a man named George King, in Sutherland Ward, aged 64; he is tall, and of spare build, and he looks much older than the age he gives, and appears as if he had been suffering for some time from illness. This condition, he tells us, results from a severe attack of rheumatic fever, under which he suffered about a year and a half ago, which was accompanied with cardiac affection.

Since that attack, he has been more or less an invalid, from a succession of catarrhal affections up to Friday the 26th of April, 1851, on which day, while he was crossing St. James's park, he was suddenly seized with a sensation as if something had forcibly closed his jaws, and he found, to his alarm, that he could not open his mouth with the most violent effort. The affection at the same time seemed to attack the throat, and completely to prevent his swallowing. When he arrived at Pimlico he could not speak distinctly; he could not eat any dinner, and was unable to swallow some gin and water which he attempted to take. He could get it into his mouth, and it even reached the pharynx, but would go no further; it seemed, to use his own expression, "to stick in his throat," and was soon returned. He made frequent and ineffectual attempts to swallow, but, from this time till the following Tuesday, he remained without taking a particle of nourishment.

When he was admitted into the hospital, attempts were made to examine his throat, but, in consequence of the state of trismus which prevailed, the teeth could not be separated sufficiently far apart to admit of any examination being made. I will read you the following extract from notes made at the time of his admission, by Dr. Salter, the house-physician:—"On attempting to look into his mouth, I found I could not separate his jaws more than about one-eighth of an inch,—just a chink. I gave him some water, which he attempted to swallow. He performed the buccal and lingual, and, to a certain extent, the pharyngeal, part of deglutition, but then, with a spasmodic effort to get it further, he choked, his eyes looked as if they would dart from his head, and up it came. Repeated attempts merely led to repeated failures. I could neither look into his throat, nor insert my finger to feel it."

When I saw him on the afternoon of the same day, I found just the same state of things,—deglutition quite impossible, the attempt to swallow followed by the forcible ejection of the food through the mouth, and in some degree through the nostrils, by a spasmodic expiratory effort.

In considering what might be the affection calculated to give rise to these symptoms, I first thought of stricture of the œsophagus; but, upon inquiry into the history of the case, it seemed very unlikely that the difficulty of deglutition could arise from this cause. The affection came on suddenly, which is not the case in the ordinary stricture of the œsophagus. Stricture of the œsophagus generally results from cicatrization of ulcers and contraction of the tissues adjacent, and such strictures are most apt to occur in the lower part of the tube not far from the cardiac orifice. Did such a stricture exist, the dysphagia would have been of a different kind. Here matters were suddenly and forcibly rejected, while, in the former condition, the food is swallowed to a certain point, and seems to encounter an obstacle at a certain situation, to which the patient points with his finger; then it is either stopped completely, and afterwards ejected, but not with the force and rapidity which we observed in this case, or, by a considerable effort, it is made to overcome the obstacle. A spasmodic state of the œsophagus might create a dysphagia like that noticed in this case; but the symptoms would scarcely have come on so rapidly, nor would the danger of choking have been so imminent, as in our patient. It seems to me, that the seat of obstruction or difficulty was not so low as the œsophagus, but rather in the pharynx, and that the food encountered it immediately on passing from the mouth.

When I had examined the patient, the existence of certain cases was brought forcibly before my mind, and I felt certain that the peculiar symptoms in the present instance resembled those which I had observed on some previous occasion with great interest. Four of such cases I have now seen. The first occurred to me many years ago in private practice. I was called to see a lady who had for some days been suffering from influenza. The principal affection, however, was great difficulty of deglutition. When she took any food, it evidently reached the isthmus faucium, but there it seemed to excite choking, in consequence of a portion apparently passing into the larynx, whence it was repelled with considerable force; so urgent was this difficulty of swallowing, that it was impossible to give her food, for fear of producing suffocation. When I looked into her throat, I saw that there was no mechanical impediment to the passage of the food into the pharynx; and all that I could observe was slight redness of the velum, and the mucous membrane of the pharynx was of a dusky hue. I found, also, that no amount of stimulation of the mucous membrane of the velum would excite contraction of the palatine or pharyngeal muscles. Believing that the phenomena depended upon an inflamed state of the mucous membrane of the throat, and not having yet learned that the proper antiphlogistic in such cases was support and nourishment, I was content to trust to leeches and blisters to the throat. But my patient became more exhausted and rapidly sank.

The second case occurred in the person of a middle-aged woman, the wife of a respectable tradesman in Westminster. I had no difficulty in immediately recognising the similarity to the former case. The symptoms were just the same. If fluids were given they ran down into the larynx, and were expelled with cough; and any mechanical stimulus failed to excite contraction of the velum. There was dusky redness of the velum and pillars of the palate. Profiting by former experience, I determined to exclude all depressing treatment in this case. I ordered injections of strong beef tea with ten grains of quinine to be given every four hours, and I freely applied the solid nitrate of silver to the fauces. The injections were given regularly, and the next morning I found my patient much better. She could swallow a little, and appeared stronger. I now ordered her to take beef tea and wine cautiously by the mouth, in small quantities at a time, and the quinine was also given by the mouth. In less than forty-eight hours more she had completely recovered.

The third case was that of a gentleman of fortune, whom I attended at one of the hotels in my neighbourhood, in the month of March, when erysipelas was rather prevalent about town. The symptoms under which he laboured were very similar to those which I have just detailed in relating the other cases. There

was great difficulty of deglutition, but he had some power of swallowing; there was also the same tendency for fluids to pass into the larynx; the muscles of the palate showed the same want of contractile power. The mucous membrane was of the same dusky red hue. This patient was treated by support and stimulants, and the local application of nitrate of silver. As he was in affluent circumstances I gave him turtle soup and port wine and quinine. He got quite well in two days.

Not long since I was called to see a woman who was suffering from symptoms of the same character. In this, as in the other cases, it was impossible, by any amount of stimulation, to excite contraction of the muscles of the soft palate; and if we administered a small quantity of fluid, it ran down into the glottis, causing violent irritation and choking. She had been ill some days, and had been treated by leeching, blisters, and mercury, as in my first case, and was in a state of extreme exhaustion when I saw her. The isthmus was quite open, and there was no impediment to deglutition except the paralytic state of the muscles. This patient died after an illness of two or three days: she died, indeed, while I was in the house.

This was the fourth case, and the patient now under treatment is a fifth. You see that they are all very serious cases, and that I am justified in calling them kill or cure cases, so brief is the period of their duration, whether for weal or woe; and although they are rare cases, you will, I am sure, appreciate the importance of being prepared for them, so that you may not be at a loss if perchance one should fall to your care. Though these are formidable cases to witness, and run their course very rapidly, terminating in death or recovery within forty-eight hours, they are, I believe, if taken soon enough, perfectly amenable to treatment, and I feel persuaded that the first case which I described would have recovered if she had been treated on a different plan. At the time that it occurred to me, I was not familiar with the symptoms—I was not "up to the disease," if I may so express myself; and I hold the opinion, that such cases would almost always recover if subjected to proper treatment before extreme exhaustion had come on.

Now, believing that our patient up-stairs was suffering in the same way as those other patients whose cases I have related, I put him on the same treatment as that which I followed in the successful cases. Ten grains of quinine, diffused in two or three ounces of strong beef tea, were administered every four hours, in the form of an enema. I should have also ordered the nitrate of silver to be applied to the throat, but that the state of trismus prevented his mouth from being opened.

On the following day, he was very much better, and his mouth could be opened to the extent of half an inch, and he could swallow a little liquid.

On the 30th, he could open the mouth sufficiently to enable Dr. Salter to examine his throat; and then, although considerable progress had been made towards recovery, the mucous membrane of the upper and back part of the pharynx was found of a purplish, dirty-red colour, indicating, as I thought, the existence of a low erysipelatous inflammation. There was no swelling of the mucous membrane, and no mechanical impediment to the passage of food into the pharynx, but the velum did not contract freely, as it does in health, upon the application of a mechanical stimulant. This condition of the velum depends upon one or both of two causes, viz., upon a benumbed or paralysed condition of the sensitive nerves of the pharynx, through which its muscular action is usually excited by the contact of the food; or upon the extension of the erysipelatous state to the muscles of the part, and a consequent paralysis of them.

The case of our patient King differed remarkably from the others, in being complicated with a state of trismus; which condition, however, I think admits of explanation, on the supposition that the principal source of irritation was the throat. If you call to mind the presence of the extensive nervous plexus lying outside the tonsils and isthmus of the fauces, which is called the pharyngeal plexus, and consider how this is formed, you will not be at a loss to account for this symptom. The pharyngeal plexus, as you know, is made up of fibres from the vagus, glosso-pharyngeal, and sympathetic nerves.

Irritation of the ramifications of the two former nerves may be readily propa-

proper trial; and I allowed the late Mr. South, of Hunter street, who was a general practitioner, to prepare and sell it, after having satisfied myself in my person, and with several of my dyspeptic patients, of its efficacy and undeniable utility. The widow of this gentleman has continued to prepare and vend it, under the title of the "liquid condiment," for her own benefit, according to this formula:—

℞. Liq. potassæ; sodii chloridi, aa ʒi.; sodæ phosphatis, ʒiss.; aq. puræ, ʒiii.

As much of the solution may be taken at a time as will not affect the taste of the beverage disagreeably.

In a great many instances the article has proved most useful; many families have it on their tables for daily consumption; and even make their tea by first putting two or three teaspoonfuls into the tea-pot with the tea.

It is not intended to be resorted to as an occasional remedy for various forms of indigestion, but constantly, in like manner as common salt.—*Med. Times and Gazette, July* 17, 1852, *p.* 71.

37.—SPASMODIC ACTION OF THE BOWELS.

By Dr. W. S. Oke, Physician to the Royal South Hants Infirmary.

In this case it would appear that there must be an excess of one of the forces of the vermicular action, for if the circular and longitudinal fibres were equally involved, the result would be increased propulsion, and not obstruction; but on the other hand, when the nice balance between these forces is disturbed, and one of them is in excess, then the vermicular action must be arrested, and obstruction be the result.

Amongst the causes of this kind of obstruction are, saturnine poison, crude indigestible food, such as shell-fish, uncooked food, acrid secretions, &c.

The severity of the spasm will depend, in great measure, upon the degree of disproportion which exists between the two forces of the vermicular action, and the saturnine poison appears to be capable of producing this disproportion in the greatest degree.

The symptoms are, vehement paroxysms of twisting pain about the umbilicus, obstinate constipation, vomiting of a green bilious fluid, and retraction of the abdomen towards the spine. The patient is often found in a bent position, pressing the seat of pain with his hands, to mitigate its severity. The tongue is not much furred, the temperature of the skin normal, and the pulse is generally under 100 in the minute.

Painters are frequently suffering from this kind of obstruction, from their being constantly employed in the use of the carbonate of lead; hence it has been called "colica pictonum."

This disease, so long as it does not exceed the limit of spasmodic action, generally terminates favourably; but if it should have assumed the character of inflammation, then the prognosis will be governed by such an aggravation.

The indications of cure are:—1st, to relax spasm; 2nd, to restore the normal peristaltic action. The first will best be fulfilled by a full bleeding, opium, and the warm bath. The second by purgatives. Fourteen or sixteen ounces of blood should be immediately taken from the system, followed by a pill, containing two grains of opium, and, if the continuance of the spasm render it necessary, one grain is to be repeated every three or four hours. This treatment will usually succeed in subduing the pain and vomiting, and sometimes act as an aperient also; but if it should fail of the latter effect, the pill (1) is to be taken every hour till the bowels are acted upon:

1.—℞. Hydrargyri chloridi, gr. j.
Extr. coloc. comp., gr. iv.
Olei caryoph. q. s.

Misce fiat pilula omni horâ sumenda donec operaverit.

The warm bath may be used at this period—the temperature 100°, and the patient be immersed twenty minutes, taking care that the temperature be not diminished.

Sometimes the symptoms of saturnine colic are met with in persons not employed in the use of lead. In such a case the gums are to be inspected, and if there be a blue line along their margin, we may be sure that the patient has been in some way or another exposed to the deleterious influence of this poison; and should he have no recollection of being so exposed, then the water he is in the habit of drinking and using for culinary purposes, is to be examined by proper chemical tests; for, however bright and tasteless it may be, if it contain a free acid, and be kept in leaden troughs, or conducted through leaden pipes, it will decompose the lead, hold it in solution, and become a saturnine poison. It is the free carbonic acid (which, in fact, makes the water wholesome, sparkling, and refreshing) that acts upon the lead; and this quality of water is found not only in various districts of Great Britain, but of every other country; and if persons residing in such districts, not having made themselves acquainted with this fact, receive such water in leaden tanks, or conduct it through leaden pipes, they have to blame only themselves for having converted a wholesome and delightful beverage into one that is deleterious. I have myself seen, in several districts in Hampshire, the deleterious effects of lead held in solution in super-carburetted water, which appeared to be, and of itself was, of the finest quality. A gentleman, resident in one of those districts, was displeased with my opinion, that the water in his well was impregnated with lead (although it was manifest one of his family had been long suffering from it), because, forsooth, many in his neighbourhood were in the habit of resorting to his far-famed spring, from, as he supposed, its superior purity. A farmer, who lived in the middle of New Forest, consulted me a few years ago, for severe colic and constipation, and as several of his relatives from time to time had been attacked with the same disease, and eventually had fallen victims to it, it was supposed to be hereditary. Suspecting that they had been exposed to the deleterious effects of lead, I tested the pump water used by his family, and found it holding a large quantity of the carbonate of lead in solution. This at once indicated the cause of the disease, and the means of preventing its recurrence.

Some practitioners have called in question the ordinary tests of lead-water, asserting that neither bichromate of potash nor sulphuretted hydrogen can be relied upon; but when a patient is suffering from symptoms of colic, when the margins of his gums show the blue line, and when the water he has been accustomed to drink is shown, by either of the above tests, to contain the solution of lead, there cannot surely be any reasonable doubt as to the cause of the disease, or the efficacy of the test.

The blue line along the margin of the gums was first noticed by Dr. Burton, and a most valuable discovery it it is, not only on account of the accuracy of its diagnosis, but because it appears to give early information of the carbonate of lead being absorbed into the system. I could adduce numerous instances in my own practice, to show its diagnostic value, but two brief examples will suffice:—

In the summer of last year I was requested to visit a small tradesman residing in the country, who was suffering severely from intestinal obstruction. As the attack could not be accounted for by any ordinary exciting cause, the gums were inspected, and a well marked blue line was observed along their margin. As he had not been in any way meddling with paint, the water he was in the habit of drinking was examined by the bichromate of potass-test, and it was found to be largely impregnated with the carbonate of lead. Under a modified degree of the above treatment he recovered, and by avoiding the saturnine causes, the disease will probably never return.

The following case is one of the secondary effects of lead, and I shall mention it in this place, as it showed the blue line in a very remarkable manner:—I was requested to visit a publican and his wife, residing near Otterborne, in Hampshire. The woman had been long confined to her bed, from paralysis of the lower limbs. The husband could manage to walk about the house, as his loss of power was chiefly in the upper extremities. On inspecting his gums there was not only a distinct blue line along their margin, but also a corresponding blue line, as deep as indigo, along that part of the membrane of the cheek which came in contact with the line upon the gums.

It is almost needless to add, that the water, which they had been accustomed

to drink, and which was conveyed through a leaden pipe from a well at some little distance, was found to be saturated with the saturnine salt.

When, from other exciting causes, there is produced a less amount of disproportion in the vermicular forces, although enough to obstruct the bowel, there is a manifest difference in many of the symptoms. Instead of a retraction, there may be a fulness of the abdomen. The pain is more of a persistent, aching character, than returning in vehement paroxysms; and there is less vomiting, indeed sometimes there is none at all.

The curative indication in this case is much the same as in the last,—viz., to subdue the action in excess, and to restore the normal vermicular function of the intestine. If purgatives have failed, they ought not to be persisted in, as they will rather increase the spasmodic action than remove the obstruction. Blood should be taken from the system, and by leeches from the epithelium of the rectum. Opium and calomel are to be given in such doses, and at such intervals, as the degree of pain may require; and this kind of colic will generally be governed by more moderate doses of opium than those prescribed for the "colica pictonum." It will be sufficient to commence with one grain of opium, and three of calomel, and this dose may be repeated in an hour, if it should have given no relief, after which it may suffice to give two grains of calomel, and half a grain of opium, every two or three hours, till the pain has ceased. In this case, also, these means will sometimes act as a purgative.—*Prov. Med. and Surg. Journal, June* 9, 1852, *p.* 294.

38.—ON THE TREATMENT OF DIARRHŒA AND DYSENTERY BY SULPHURIC ACID.

By Edgar Sheppard, Esq., Enfield.

[The following cases illustrate the value of sulphuric acid in indiscriminate cases of diarrhœa. Mr. Sheppard says:]

During the last six weeks I have seen upwards of fifty cases of diarrhœa, many of them being severe, some few the very worst, forms of English cholera. In only one instance have I witnessed the failure of the acid treatment, and in that instance the chalk and astringent treatment was unsuccessful also. There was only this difference between the two systems:—the acid plan seemed to have no effect upon the disease, the chalk plan actually aggravated all the symptoms to a very frightful extent.

I propose in this brief paper, first to give my readers some idea of the character of the prevailing epidemic in my locality; secondly, I purpose detailing a few of the worst cases selected from my note-book; and, thirdly, I propose to draw a few practical conclusions from them as to the comparative advantages of the alkaline and acid modes of treatment.

I. The character of the epidemic which has been so prevalent in my neighbourhood, during the last six weeks, has been as follows:—Great prostration of the vital powers; severe griping and pinching pains in the bowels (not invariable), greatly aggravated by drinking anything hot, greatly relieved by cold; tongue generally dry and furred, occasionally moist and red; distressing flatulence, the bowels being at times very much distended, burning thirst, and sensation of heat down the whole course of the alimentary canal, with (in some cases) incessant vomiting.

II. *Case* 1.—I. T., seized on the morning of August 1st with violent pain in the bowels, with vomiting and purging—a most decided case of what is vulgarly called "*upwards and downwards.*" I was sent for about nine o'clock in the evening. He complained of intense pain, which had been greatly increased by his having swallowed, about half an hour previously, a cup of hot tea, although the stomach only retained it for about five minutes; pulse feeble, 120; tongue red and moist; feet cold; intense thirst and desire for cold water, which his friends would not let him have; had had about fifteen watery rice-coloured evacuations since morning. Nothing would remain on the stomach. I immediately gave him a dose of the following mixture, which I had taken with me in my pocket, upon his wife's description of the case:—℞. Sacchari albi, dr. iv.; acid. sulph. dil., dr. ij.; tr. cardamom. co., dr. iv.; aqua menth. pip. ad., oz. vi. M. A fourth part to be taken every four

hours.—The patient had no sooner swallowed the mixture than it returned. I then ordered some cold fresh water from the pump to be procured, when I allowed him to drink as much as he desired. He immediately swallowed three tumblerfuls, and expressed the most intense satisfaction. "The burning heat," he said, "was quenched." The pain immediately ceased. The sickness did not return. In about ten minutes' time I gave him another dose of the mixture, with a pill of calomel and opium, one grain each, and left him with directions to continue the mixture every four hours, and drink as much water as he wished. The following day I found my patient quite well. There had been no recurrence of either the vomiting or purging.

Case 2.—Rev. T. S. is subject every summer, being a nervous weak subject, to attacks of dysentery, which leave him in a state of great prostration. I first saw him August 3rd. The dysentery had been on him for three days, and had not yielded to his usual remedy—the mist. cretæ co., with a little tr. opii. Great pain in the bowels; subject to, and then suffering from, ascarides; tongue dried and furred; constant nausea. Ordered the same mixture as in Case 1, which afforded immediate relief. The next day my patient was convalescent, suffering only from great debility. On the 5th of August he went to Gravesend for change of air; and I gave him an ounce bottle of the dilute sulphuric acid, with directions that he should take twenty-five drops whenever he was threatened with any return of the dysentery. Gave him a turpentine enema the night previously, which destroyed a whole nest of ascarides. On his return from Gravesend, Mr. S. stated that he had had several attacks, but that they had been immediately checked by the exhibition of the drops. He complained of the chalk mixture as having invariably "clogged" the bowels, and produced constipation, whilst the acid stopped the dysentery by increasing the tone of the mucous membrane of the canal.

Case 3.—J. Q., 2 years of age. Summoned to this child early in the morning of August 6. Incessant pain in the bowels, and purging for the last eight hours; skin cold and clammy; pulse extremely feeble, and rapid; intense anxiety of countenance. In fact, the child appeared moribund, and the parents quite thought the case hopeless. They had given a little brandy, which had been immediately rejected by the stomach. I sent for a tumbler of cold water, which the child caught sight of, and requested to have. The little thing drank off the whole, and sunk back on the pillow quite exhausted. Ordered the following mixture:—℞. Acid. sulph. dil., dr. j.; tr. cardamom. co., dr. j.; sacchar. alb., dr. ij.; aq. menth. pip., ad., oz. ij. M. A teaspoonful every hour. I called at two o'clock P.M., when the child was sitting up in its mother's arms eating a piece of bread and butter. The purging had quite ceased. Mrs. Q. said "the effect of the first dose was quite magical—the child altered for the better in about ten minutes." On the following day my little patient was running about the room when I called. Being a delicate scrofulous subject, I prescribed eight drops of muriated tincture of iron three times a day.

Case 4.—T. L., aged two years and a half. Symptoms precisely analogous to those detailed in Case 3. Saw this child on Sunday evening, August 29. Ordered mixture as above. All the symptoms immediately relieved.

Case 5.—Mrs. B., a lady from Devonshire, 70 years of age, taken ill August 26. I saw her on the morning of that day. Great uneasiness in the bowels, hardly amounting to serious pain; constant vomiting and purging; tongue dry and furred; fœtid breath; pulse 100; abdomen tympanitic; great thirst. Ordered iced water *ad libitum*, and the following mixture and pill:—℞. Sacchari albi, dr. iv.; acid. sulph. dil., dr. iss: tr. cardamom. co., dr. iij.; liq. morph. bimeconat., m. xl.; mist. camphoræ, oz. vss. M. A fourth part every four hours.—℞. Hydr. cum cretâ, gr. iij.; pulv. ipecac. co., gr. ij. To be taken as a pill immediately. On the following day I found that my patient had obtained relief in the course of two hours. Only one evacuation since my visit yesterday; pulse 88; tongue moist and not so much furred; abdomen less tympanitic; had passed a comfortable night. She said she believed the iced water had "done wonders for her." Rapid improvement took place, and she left here for home August 31st.

Case 6.—Mr. J., seized with violent vomiting and purging August 29. Intense thirst and burning heat down the alimentary canal. Had been persuaded to drink hot things, which had greatly aggravated the symptoms. Flatulence and severe

abdominal pain. Ordered cold spring water *ad libitum*, which checked the vomiting, followed by thirty drops of acid, with tr. cardam. co. every four hours. Immediate relief.

III. The above cases have been selected from my note-book to illustrate the *rapidity* of the cure in the treatment by sulphuric acid, as compared with that by chalk and opium. In every case that I have seen, with one exception, the amelioration in all the symptoms has been equally rapid. This exception occurred in one of my own servants, a delicate young woman, 25 years of age. The acid treatment did not seem to do her much, if any good, when I immediately resorted to the following mixture (my olden form for the treatment of diarrhœa):—℞. Cretæ pp. dr. ij.; conf. aromat., scr. ij.; sp. ammon. aromat. dr. ij.; tr. opii dr. j.; tr. catechu, dr. iv.; aq. menth. pip., oz. v. M. A fourth part every four hours.

The first dose so aggravated her symptoms that I could not persuade her to take a second. I then returned to the acid treatment, in which she persevered for two days, being occasionally better, and then again as bad as ever. The symptoms at length yielded to the following combination:—℞. Potass. chlorat., sodæ sesquicarb., utrq., dr. j.; tr. cinchonæ co., dr. iv.; sp. æth. sulph. co., dr. j.; infus. cascarillæ, oz. v. M. A fourth part every four hours. A glass of port wine twice a day.

In about ten cases out of the fifty entered in my note-book, I first tried the chalk and opium treatment, before resorting to the acid; *in only one* was perfect relief afforded. The vomiting has been so severe in the prevailing epidemic, that it would seem as if the stomach was unable to bear so nauseous a mixture as that of chalk and opium. And in most of the cases I have found the best, indeed the only efficacious plan to be, to relieve the intense gastric irritation by cold water, before resorting to the medical treatment. In some cases, if the stomach will bear it, the chalk seems to stop the diarrhœa, but to increase the nausea, and to produce most uncomfortable sensations in the bowels on the day after its exhibition. This I have invariably observed in the olden plan of treatment.

The conclusions to be drawn from my experience of the sulphuric acid in the treatment of diarrhœa and dysentery are as follows:—

1st. It is *more efficacious* than alkalies, opiates, and astringents, in a proportion greatly exceeding ten to one.

It is *more rapid* in its action (especially in children), in a proportion greatly exceeding twenty to one.

3rd. It seems to act in a more rational, and (if I may so express myself) scientific manner, by increasing the *tone* of the mucous membrane of the alimentary canal, rather than by simply astringing its pores.

4th. The worse the case, the more rapid and marvellous seems to be the cure—a most striking feature as compared with the treatment by chalk and opium.

I would urge, in conclusion, upon my medical brethren, the desirableness of giving this system a fair trial; and I would, moreover, advise them, instead of giving the acid alone, with water, to combine it with a little sugar and (most rare and excellent of all tinctures) compound tincture of cardamoms, which seem greatly to relieve the so-frequent distressing flatulence. Unless the character of this autumnal epidemic should greatly alter, they will arrive at the conclusion, after having tested fairly the acid plan of treatment, that it does not admit of comparison, but only of *contrast*, with the olden system.—*Provincial Med. and Surg. Journal, Sept.* 15, 1852, *p.* 471.

39.—*Cases of Diarrhœa treated by Sulphuric Acid.* By JOHN HILL, Esq., South Cave.—[The following cases are mentioned by Mr. Hill as examples of this mode of treatment:]

June 19.—J. D., aged 40, agricultural labourer, was attacked with vomiting, purging, cramps, cold extremities, and great prostration.

℞. Acid. sulph. dil. ℥iii.; misturæ camphoræ ℥viiss. Ft. mist. cap. ℥i. quartis horis. After the third dose all the symptoms were removed.

20th.—Quite well.

Aug. 2.—J. H., aged 45, agricultural labourer, was attacked with vomiting, purging (rice-coloured evacuations), violent cramps, and cold extremities, with hollowness of voice, &c.

℞ Acid. sulph. dil. ℥ xxv.; mist. camph. ℥ iss. Ft. haust. tert. qq. hor. s.

Six hours afterwards no return of sickness. Only twice purged, cramps gone, and after the fourth dose all the unfavourable symptoms removed.

3rd.—Quite well.

Aug. 2.—Mrs. H., aged 78, was attacked on the 30th of July with purging and sickness; tongue coated, pulse feeble, extremities cold; in a state of collapse.

℞. Hydr. chlorid. gr. iv.; pulv. opii gr. iss. Conf. q. s.; ft. pil. stat. sum.

℞. Mist. cretæ ℥ vij.; tinct. catechu ℥ i.; tinct. opii ℥ iss. M. ft mist., s. coch. i.; post sing. sed. liq. Catapl. sinapis scrob. cord.

3rd.—The symptoms as urgent as yesterday; vomiting more troublesome; continued purging; cold extremities.

℞. Acid. sulph. dil. ℥ iii.; mist. camphoræ ℥ viij. M. ft. m. s. ℥ j. tertiâ qq. horâ.

4th.—Only twice purged; stomach still irritable; but the vomiting less frequent; the circulation improved; drowsiness.

℞. Mist. acid.; catapl. sinapis nuchæ.

5th.—Passed a good night; no action of the bowels; vomited twice; pulse improved.

℞. Acid. hydrocyan. gt. j.; tinct. card. co. ℥ ss.; infus. cascarillæ ℥ iss. Ft. haust. qq. horâ. Habt. ol. ricini ℥ iij. stat.

6th.—In every respect better. As might be expected, her recovery was slow, in consequence of her advanced age.

8th.—Well, but very weak.

August 5.—R. E., aged 60, was attacked yesterday with the following symptoms:—Purging (rice-coloured), vomiting, cramps, great prostration, anxious countenance, voice hollow, and suppression of urine, &c.

℞. Acid. sulph. dil. ℥ iij.; mist. camph. ℥ viijss. Ft. m. s. ℥ j. tert. qq. hor.

No sickness after the second dose; only twice purged; cramps continue.

Evening.—Surface warm; no return either of sickness or purging; better in every respect.

6th.—Quite well, but very weak.

August 6th.—W. M., aged 65, has had sickness, purging, and cramps, the whole of last night; great prostration; urine scanty; tongue glazed, &c.

℞. Acid. sulph. dil. ℥ iij.; mist. camphoræ ℥ viii. Ft. m., capt. ℥ j. tert. qq. hor.

7th.—The symptoms entirely removed after the third dose; well.—*Med. Times and Gazette, Aug.* 21, 1852, *p.* 197.

40.—*On Matico in Diarrhœa.*—M. Modonini states that he has employed this substance in about 120 cases, and usually with good and speedy effect, in various species of intestinal discharges, and especially in atonic diarrhœa. It is given at the Bologna Hospital in doses from 18 grs. to ℥ j. per diem, no inconvenience save a little nausea or diarrhœa ever being caused, and this being capable of removal, either by diminishing the dose, or temporarily suspending the remedy. In the most favourable cases, an impression is made upon the disease by three or four doses; and it is quite relieved in from three to six days. The medicine should, however, be continued a while longer, in order to prevent relapse. In those diarrhœas in which, owing to the existence of visceral changes, or the presence of a general dyscrasia, the return of the diarrhœa is inevitable, the matico is still an invaluable remedy, owing to the rapidity of its astringent action, which enables us to suspend the exhausting discharges, and obtain time for the employment of any other means which the nature of the case may indicate.—*Bulletino delle Scienze Med.* vol. xx. p. 63—*Medico-Chir. Review, July*, 1852, *p.* 275.

41.—*Sarcina Ventriculi.*—By Thos. Edward Amyot, Esq., Diss, Norfolk.—[In a letter to the editor of the 'Medical Times and Gazette,' Mr. Amyot records the

following case, which for eight years baffled every attempt at effectual relief. The patient was a female aged 70, mother of six children, short, active, and when free from the attacks of her disease, inclined to be florid and healthy in her appearance.]

Eight years since, at Christmas time, she was attacked with inflammation of the stomach and œsophagus, of which she was relieved by my much respected neighbour, Mr. Mayhew, of Stradbroke. Six months after this I first attended her, and found her suffering from very frequent and most violent acid vomiting, which was difficult to account for, as the pulse and tongue were unaffected, and little or no tenderness was complained of at the epigastrium; there was, however, much flatulence and distension. Alkalies, hydrocyanic acid, and creasote, were tried with perseverance, but gave little or but very temporary relief. The nitrate of silver and opium were, I think, more successful, and their use was continued for some time; but they were at last abandoned as insufficient, and in fear of staining the skin. I next tried a strong infusion of calumba, about double the strength ordered in the P. L., with a more satisfactory result; but I was obliged to give it in a still more undiluted form, and for the last three or four years she has taken from ʒ ss. to ʒ j. of the concentrated essence of calumba (I have principally used that prepared by Messrs. Gale, Baker, & Co.,) with ʒ ss. of the tincture to the eight-ounce bottle, every two or three hours during the attack. This, as a means of relief, has proved most perfectly successful; and the intervals of health, during which she is active and bustling, and eats, drinks, and sleeps well, have been lately of great length. Twice, for instance, a clear twelvemonth has elapsed without any return of symptoms.

On reading the notice of sarcina in Professor Quekett's admirable Lectures on Histology, vide 'Med. Times, 1851, p. 366,' I became very strongly impressed with the idea that I had at last got a clue to the nature of my patient's disease, and I immediately ordered that a portion of the vomited matter should be saved for inspection at the earliest opportunity. That opportunity has only just occurred, and the result is the following:—I received the fluid a few hours after it was thrown up; it had much the appearance of thin mucilage with a dense, dirty white, compact sediment. In odour it was faint, and somewhat resembled stale urine. It produced intense reddening of the litmus-paper, and powerfully effervesced with carbonates. A small portion taken from the sediment with a pipette, and magnified about 300 diameters, showed a great abundance of the characteristic crucial forms of the sarcina combined with much mucus, epithelial *débris*, and the fragments of muscular fibre, both simply and transversely striated.

Since making the examination, I have again seen my patient, and questioned her closely as to the nature of her attacks. She at first feels a "boiling up" (I use her own words) in the stomach and throat, and soon after a quantity of tasteless water rises into her mouth; this is immediately followed by sudden and violent acid vomiting, which formerly lasted, at short intervals, for days, and during the attacks she could take no food, and was much debilitated; but now, if she has the calumba at hand, she can always master it (to use once more her own expression).—*Med. Times and Gazette, Aug.* 14, 1852, *p.* 173.

42.—*Bothriocephalus Latus, occurring in an English Child, cured by the Oil of Male Fern.* By Dr. Wm. Withey Gull.—[The child was admitted into the children's ward on the 20th February, 1852. The following is the report of Mr. Chaplin, the clinical clerk:]

She lives at Woolwich, and the mother gives the following account of her:—At the age of eighteen months, having then been weaned more than half a year, she became very ill, with feverish symptoms and cough. Her ailment was so severe that it was thought she would die; but after having passed a quantity of tape-worm, rolled up into a mass of the size of the bowl of a tobacco-pipe, she began to recover. Since that time she has had several similar attacks, becoming feverish and fretful, with loss of appetite, &c., and soon after passed a portion of the worm, upon which the symptoms have subsided. These attacks came on, at first, at intervals of some months, but lately they have been more frequent. She passed the last portion about a week ago, having previously suffered in the usual way, described above. The

several pieces of worm which the mother had collected, and brought with her, measured thirteen feet. The parents of the child are English, and neither of them has ever been abroad, the limit of their farthest excursion from home being Gravesend. The mother was born at Poplar, the father at Woolwich, where he works as a smith. His occupations have sometimes taken him on board foreign vessels. They have no foreign friends, nor friends residing on the continent, from whom they could have received any presents. The child was born at Limehouse, and lived there with its parents for some time, and during that period the family probably used the water of the New River Company. Whilst living at Woolwich, they have obtained it from the Kent Water Works. On admission, the child was pale; rather dull, and feverish; bowels confined; pulse natural; tongue clean and pale; abdomen large and hard. Ordered ten grains of jalap-and-mercury powder to be taken at bed-time.

23rd.—The bowels have not yet been acted upon. Repeat powder.

25th.—Powder produced a copious evacuation, but no portion of worm expelled. Ordered the following mixture:—Magnesia and sulphate of Magnesia, a dessert spoonful three times a day.

28th.—The bowels have continued to act freely, but no portion of worm has passed. Ordered the following draught:—Oil of male fern, one drachm and a half, acacia mixture, two drachms, distilled water, one ounce and a half; to be taken early the following morning.

29th.—The draught was administered at seven o'clock this morning, and produced slight sickness, but only a small part was returned. At one o'clock the bowels acted forcibly, accompanied with a good deal of straining. The worm measured seventeen feet, and, including the head, was expelled entire. The child suffered no inconvenience from the medicine in any way, and the following morning seemed well.

The interest attaching itself to this case is peculiar, from the species of worm, the early age of its locating itself in the child, and the satisfactory effects of the oil of male fern.

In our present state of knowledge respecting intestinal worms, every fact connected with their history deserves to be recorded. The occurrence of the bothriocephalus latus in persons who have not lived out of England is rare. Professor Owen states, that in looking over the collection made by a celebrated worm-doctor in Long-acre, he found three specimens of this worm; two of these had come from persons who had been in Switzerland, of the third no authentic account could be given. In a conversation with him on the case here recorded, he remarked that a sea-port was just the locality in which we might expect to meet with anomalies in the geographical distribution of intestinal worms, since their ova might be deposited in various ways in such localities, by persons who traded thither, and that it was surprising their occurrence was so rare. To which I may add, that when we consider the fertility of these creatures, and the possibility of Russian sailors being infested with them, we may indeed wonder that they have not been imported amongst us; and the fact that they have not been prevalent, suggests that they are more dependent upon *external conditions of soil and the like*, than upon the human body itself—for we can hardly suppose that the intestinal secretions of a Russian or a Swiss are more favourable to the existence of a bothriocephalus latus, than are those of an Englishman.

The circumstances under which these creatures exist out of the body are yet unknown, but their restriction to certain localities, and the changes of form which some of this class undergo, render it probable that we may yet recognise them under some other form in the water of the places where they occur. With such views, we can well understand why the tape-worm of one locality should not prevail in another, and also why, where a solitary exception is found, it should be in a place having communication with foreign countries.

The extreme fertility of the bothriocephalus will be understood, by considering that each foot of the well-developed worm contains 150 segments or joints, that each joint possesses its own ovary and male organs. Hence, each joint is fertile; and as each ovary would produce 8000 ova, according to as careful a calculation as possible, ten feet of such a worm would produce 12,000,000 of ova.

I have taken every means of examining the head of this specimen, but can find

no trace of a terminal pore, by which it could imbibe nourishment, nor any signs of vessels by which the intestinal fluids, if so taken up, could be distributed. It seems probable that these animals nourish themselves as the algæ do, *by absorbing the fluids in which they are immersed by the whole surface of their bodies*; a view which I think I am at liberty to say is thought by Professor Owen to be not improbable.—*Lancet, Aug.* 14, 1852, *p.* 148.

43.—*On Anthelmintics.* By Dr. Merel.—As to anthelmintics, children of tender age do not suffer from the tape-worm, which in all my practice I scarcely have encountered before the eighth year, even this being a rare case. I have not to speak, therefore, of the male-fern, or of the pomegranate root, but to mention only those remedies which have appeared to me the best against the *ascaris vermicularis*, and *ascaris lumbricoides*.

The *ascaris vermicularis* (maw-worm) dwells in the rectum and the lower part of the large intestines, crowded in great numbers, most frequently proper to infancy and tender childhood. The remedies employed to remove them are almost in all countries the same. I will mention, however, injections of an infusion of red onion, mixed with some drops, or half a grain, of extract of aloes.

Ascaris lumbricoides is the worm that causes frequent and sometimes severe disturbances from the second year of age, its abode being the small intestines, and sometimes the stomach. I can recommend the following powder, which I have found most efficient in the complaint in question:—

℞. Pulv. sem. santonici,
Pulv. sem. tanaceti utrq., dr. ss.
Pulv. rhei, gr. xij.
Pulv. jalapæ, gr. viij.
Sacch. alb., scr. iv.

F. Pulv., to be divided into six or twelve powders, according to the age of the child. From two to three powders every day.

If we are not mistaken in the diagnosis, after a course of four or five days with these powders the worms will come out; if we have been mistaken, which easily happens with this complaint, the above powders, united with a strong reduction of farinaceous food, at least will have exerted good effects upon that condition of the abdomen which resembled helminthiasis.

Mercury is less efficient as an anthelmintic than the above remedy, and should never be given repeatedly, unless there is clear and special reason for its use. If the constitution of the child, however, is strong, and you wish to increase the force of the medicine by the addition of calomel, then I advise you to do this only after you have given, during three or four days, the former powders, and to accomplish then the trial or cure by adding to the three or four last doses two or three grains of calomel to each.—*Provincial Journal, and Dublin Medical Press, July* 14, 1852, *p.* 23.

44.—ON THE STRUCTURE, FUNCTION, AND DISEASES OF THE LIVER; AND ON THE ACTION OF CHOLAGOGUE MEDICINES.

By Dr. C. Handfield Jones, F.R.S., &c.

[The following condensed account of Dr. Handfield Jones' investigations, at a meeting of the Royal Medical and Chirurgical Society, was communicated by Dr. Bence Jones.]

The author first described the minute structure of the liver, which consisted essentially of a mass of nucleated cells or celloid particles, usually more perfectly formed than the cells either of the salivary or renal glands, presenting a distinct nucleus, with a nucleolar spot, an exterior envelope, and an included mass of soft, semi-solid, albuminous substance, which commonly contained a few oily molecules. In addition to these, in well-nourished livers, were numerous free nuclei, imbedded in albuminous blastema, which exhibited various stages of progress towards the mature or perfect cell. The oily contents of the cells were

subject to great variation, both in the same individual and in different classes of animals ;—the less perfect the type of the respiratory process, the greater the quantity of oily matter in the hepatic cells. The cells in their general mass constituted the hepatic parenchyma ; this might be subdivided into smaller portions, called lobules, which were separated from each other more or less completely by fissures, the fissures themselves being continuous with canals that ramified throughout the parenchyma, and which, from containing the portal vein and its associated vessels, had been termed portal canals. In reference to the mode of distribution of the vessels, originally so well expounded by Mr. Kiernan, the author remarked that he decidedly agreed with Theile, who denied the existence of the vaginal branches and plexus of the portal vein mentioned by Mr. Kiernan. The author quoted from a paper by Mr. Paget, who had described these vaginal plexuses to be derived, not from the portal veins, but from the hepatic arteries, from which they were completely filled, when both arteries and veins were at the same time injected. The interlobular portal veins were therefore derived directly from the portal veins ; and those which appeared to be vaginal branches of the portal vein were its internal roots, by which it received the blood which had served for the nutrition of the hepatic ducts and other vessels of the liver. After alluding to the mode of ramification of the hepatic artery, and the divisions of the hepatic ducts following the passage of the portal canal, the author referred to the relation which existed between the ultimate ducts and the cells constituting the parenchyma of the lobules. The prevalent opinion had been, that these cells were exactly homologous to the cells of the renal tubuli or salivary vesicles, like them growing on a free surface open to the exterior. Hence some anatomists had believed they had detected a basement membrane, forming anastomosing tubes, constituting a true lobular biliary plexus. Others, unable to find a basement membrane, had described the ducts as continued into the parenchyma of the lobules, as channels without proper walls, mere intercellular passages. After referring to the researches and opinions of Weber, Müller, Professor Retzius, on the one side, and of Val Guillon, Gerlach, and Dr. Carpenter, on the other, the author stated that the views of Kölliker, who denied the existence of intercellular passages in the lobule, agreed very nearly with his (the author's), and conceded his main position, that the cavity of the ducts was quite shut off from the cells of the lobules or their interspaces. The structure of the ultimate ducts, which the author had first discovered, was peculiar, and seemed to indicate strongly that they exerted active functions, and that they were something more than mere afferent canals. The injection of the duct, in the livers of pigs, by the double method, using separately saturated watery solutions of bichromate of potass and acetate of lead, exhibited an abundant yellow precipitate in the fissures; but in very few parts did it penetrate the lobules, which must have happened if there existed a lobular biliary plexus, or a plexus of intercellular passages. The author conceived, therefore, that the hepatic ducts did something more than merely carry out already elaborated bile. The ultimate ducts were far too small, and too sparingly distributed, to be able to take up the bile from so vast a mass of cells as that which constituted the parenchyma. If the ducts did not extend beyond the margins of the lobules, of which the author had no doubt, then the bile must be transmitted from cell to cell ; or there was a march of cells outwards from the centre to the circumference ; or else the bile, arriving at the margin of the lobules, was taken up by the ultimate ducts in some unknown way. The author thought such assumptions groundless and unnecessary ; and that the pathological state of fatty liver, as well as the fatty liver occurring naturally in fishes, showed that the secretion of the parenchyma was not identical with that of the ducts, for the gall-bladder could hardly contain deep-green bile, when the parenchyma was nought but a mass of oil. He concluded, then, that the parenchymal cells of the lobules did not merely secrete bile which was carried off unaltered by the ducts, but that the cells secreted biliary material, or some of its components, which were not fully elaborated or formed into perfect bile, except by the action of the ultimate ducts. Proof was then offered that the hepatic cells did not ordinarily contain bile, although it was commonly held they did. He believed that to be a diseased or exceptional condition, not found in the hepatic cells of slaughtered or healthy

animals. Furthermore, a yellow tint in the cells was no proof of the presence of bile; it showed merely the presence of pigment, and yellow pigment is found in the fat of some animals, quite independent of biliary secretion. Chemistry must be resorted to, to solve the question of the presence of bile in the hepatic cells. The author had made alcoholic extracts of the livers of different animals, and having evaporated to dryness, the residue, when dissolved in water, failed to show, by Pettenköffer's test, any reaction characteristic of the presence of the bile. The author, however, did not wish to express a positive opinion, but he thought that the received opinion had need of more direct evidence, before it could be regarded as proved. He then detailed the mode in which the morphological structure of the ultimate biliary duct fulfilled the function of secretion. The chemical changes which the ultimate ducts effected, might be conceived according to the hypothesis of Lehmann; and a summary of our present knowledge might stand as follows:—Sugar, oil, and a yellow pigment were found in the parenchyma of the liver; bile is not found there, but in the ducts; it is inferred, then, that the ducts, through their ultimate extreme portions, *make* the bile. The author next proceeded to detail some experiments made relative to the action of cholagogue medicines, the results of which led him to believe that mercury, muriate of manganese, and colchicum, were the only ones which seemed to increase the production of yellow pigmentary matter in the cells of the liver. They also increased the production of glyco-cholite and taura-cholite of soda; but it had to be determined whether the quantity of these principles was always proportionate to the yellow pigment. It was clear that the cholagogue action of a medicine, its emulging effects on the ducts, was distinct from that which it excited in the production of biliary pigment. One very important effect of the administration of mercury on the liver, was noticed to be congestion of this organ; an argument rather forbidding the use of the remedy in inflammation of the substance of the liver, a plan otherwise recommended by analogical experience. The author then passed to the subject of diseases of the liver; the microscopic appearances of fatty liver were detailed, and the question, what constituted true fatty degeneration of the liver, discussed. Was it a simple increase in the quantity of oil naturally existing in the hepatic cells, or was it a further and more important change? He believed the latter. In the liver of animals artificially fed on oily food, and subsequently examined, the cells, as well as the intercellular substance, were loaded with oil-molecules; the accumulation of oil was equal everywhere. But in the morbid state of fatty degeneration, the oil-drops were not enclosed in distinct cells, but appeared to lie in an indistinct and granular, or semi-fibrinous substratum. Another point of difference consisted in the absence of sugar in true fatty degeneration; while in the liver of an animal fed on oily food to produce a fatty liver, sugar could be detected. Another point of importance was the limitation of fatty degeneration to the margin of the lobules; it was not a mere accumulation of oil in the marginal cells, but a destruction of those cells. A liver thus affected presented the lobules marked out by a zone of opaque matter. No satisfactory explanation of this tendency of oil to accumulate in the marginal cells could be offered. Fatty degeneration of the liver might occur in very different diseases; it was by no means peculiar to phthisis. Reference was then made to the waxy liver of Rokitansky, with which the author was not sure that he was acquainted. Cirrhosis was then mentioned, and Rokitansky's description quoted, as also that of Dr. Budd, whose views expressed the opinion ordinarily received, but from which the author in some degree dissented. The author believed that an unhealthy nutritive process was the essence of cirrhosis, and might be developed in one of three situations. 1. In the larger and moderate-sized portal canals, excluding only the smallest. 2. In these last and in the fissures. 3. In the smaller canals and fissures, and in the substance of the lobules. The first form produced common *hobnail* liver; the second and third, the tough, firm, dense liver, sometimes termed brawny. The author considered cirrhosis to represent essentially a degenerative process, and to arise from the effusion of an unhealthy plasma, not only in the canals and fissures, where it induced unnatural increase, but also in the external part of the lobules, where it passed into a solid form, and constituted an amorpho granular substance, compressing the capillaries and obstructing the secreting cells. The thickening and condensation of the

fibrous tissue in the liver were thus not so much the effect of an inflammatory action, as of a low degenerative process, analogous to that which stiffened the valves of the heart and contracted the orifices; and which view the author thought was supported by the results exhibited in a table appended to the paper. The subject of jaundice next received attention. This was a disease that manifestly resulted from the conveyance into the blood of bile pigment, a constituent of the bile which was essentially excrementitious, and intended to be cast out with the fæcal matter. In many cases it existed only as retained excretion; in others it seemed to be formed in excessive quantity, as in the acute yellow atrophy of the liver. Yellow matter was often found in the central cells of the lobules, and, nevertheless, there was no jaundice. It should be borne in mind that the yellow pigment, as it existed in the cells, did not evidence the presence of biliary matter, of cholic acid, or its conjugates. The yellow matter could be extracted by alcohol, and its characteristic reaction obtained by nitric acid, but Pettenköffer's test decided against the presence of any organic biliary acid. The deep colour of the urine in jaundice depended on the presence of bile pigment solely; no trace of cholic acid was discoverable. The author considered the majority of cases of jaundice to depend on the absorption into the blood, not of completely formed bile, but of one of its constituents only, the yellow pigment; and this might take place in one of three ways: 1. By a mechanical obstruction to the flow of bile into the intestine, through the ductus communis choledochus. 2. From inaction of the elaborating ducts. 3. With or without impairment of the action of the excretory ducts, when an increased quantity of yellow pigment was formed in the parenchyma of the liver.—*Lancet, June* 26, 1852, *p.* 614.

45.—*Fatty Enlargement of the Liver.* By Prof. Bennett.—Fatty liver is now well known to depend on the secretion of a large quantity of oil, which is stored up in the hepatic cells. These cells are under such circumstances frequently enlarged, and contain oil varying in amount from a few granules to a large mass, which occupies the whole of their cavities. Not unfrequently livers, which to the naked eye appear healthy enough, may still be demonstrated with the microscope to contain an unusual number of fat granules, and there can be little doubt that considerable variations may exist in this respect quite compatible with a state of health. Almost all stall-fed animals that do not labour, possess a large amount of fat in their hepatic cells. It is only where the organ is much enlarged, altered in colour, and presses upon neighbouring viscera, that its fatty degeneration can be said to interfere with the vital processes.

In man, fatty degeneration of the liver has been observed to be very common in two kinds of cases—1st, in drunkards; 2d, in persons labouring under phthisis pulmonalis. Drunkards are continually taking alcoholic liquids, which abound in carbon, and which being too large in amount to be excreted from the lungs as carbonic acid, and from the liver as bile, is stored up in the latter organ in the form of fat. In phthisis pulmonalis, the excretory power of the lungs is diminished, and the excess of carbon in the tissues and food is thrown upon the liver to be excreted. Under these circumstances, it is converted into fat and stored up in that organ.

The manner in which the livers of geese are prepared in Strasburg, is by following a process somewhat similar. They are confined in close cages, in a heated atmosphere, and largely supplied with food. Want of exercise and heat diminish the respiratory functions, and cause that of the liver to be disordered, and the result is enlargement of the organ from accumulation of fat. In the case before us, such exactly seems to be the cause of the disease. A man is kept stationary watching a steam-engine, in an elevated temperature, whilst he is consuming his usual food, and exceeding in alcoholic drinks.

This view, however, has been objected to on the following grounds:—1st, That the connection between fatty liver and disease of the lungs is not general; 2d, That there is no evidence that a fatty liver does not excrete bile as usual; and 3d, That as a considerable portion of bile is absorbed into the blood to be excreted from the lungs, the liver must be considered as preparing material for

these organs. Hence it is argued that it would be a strange compensation if the functions of the liver were to be increased, while that of the lung is diminished by disease (Budd.) But if fatty liver be not always conjoined with diseased lung, it will be found associated with some circumstance which diminishes the function of that organ, in relation to the work it is called upon to perform; for instance, the separation of carbon from the alcoholic fluids taken by the drunkard. Again, want of exercise from various diseases, and especially phthisis, whilst, in order to support the strength, wine and nutritious diet are given liberally, may frequently be seen to be the cause of fatty liver. Further, although it be granted that the liver may in health prepare carbonaceous matters for pulmonary excretion, it must be clear that if the lungs cannot accomplish this function, such matters must be thrown back or retained in the liver, and constitute a powerful cause of fatty degeneration of that organ. On the whole, therefore, we must regard excess of carbonaceous matters in the system, and the diminution of pulmonary action, as the chief cause of derangement in the functions of the liver; a view which has the merit of pointing out to us as remedies a diminished diet, a temperate climate, appropriate exercise, and an endeavour to promote the functions of the lungs and of the skin.

There is another structural alteration of the liver, which, from the colour and general appearance so like bees' wax it assumes, has been called "waxy," and sometimes "brawny," liver. This disease has been confounded with fatty liver, although an examination of its minute structure will show that the hepatic cells present a very different character. Instead of being enlarged and filled more or less with oil globules, they are colourless, shrunken, and for the most part destitute of contents, while the nucleus has disappeared. The lesion seems to me to be a further stage of the fatty degeneration, in which the oily matter is absorbed, and the cell-walls are left behind and aggregated together; but further researches are required to determine this point.—*Monthly Journal of Med. Science, August*, 1852, *p.* 164.

46.—*On Cirrhosis of the Liver.* By Professor Bennett.—This morbid change in the liver consists of hypertrophy of the fibrous element between the lobules of the organ and its subsequent contraction, whereby its volume is diminished, and the secreting cells compressed and atrophied. As a further result the large venous trunks are also compressed, and their commencing ramifications so congested that effusion into, or dropsy of, the peritoneal cavity is induced. The nutmeg liver is an incipient condition of cirrhosis, in which the portal system of vessels in the organ is congested. In both conditions, the hepatic cells are more or less fatty and atrophied. The fatty degeneration in nutmeg liver may be seen to commence at the circumference of the lobules, whereas in the advanced stage of cirrhosis, all the cells are more or less diseased, some loaded with fat, and others with yellow pigment. Notwithstanding the great organic changes which are frequently observed in this disease, danger is not so much to be apprehended from interruptions in the functions of the liver, as from the ascites induced by the constriction of the large abdominal veins, which, by distending the abdomen and compressing the lungs and liver, so interferes with those important organs, that death is occasioned.

The treatment in cirrhosis must be purely palliative, and directed to diminishing the ascites, by means of diuretics and diaphoretics. The question of drawing off the fluid by paracentesis is one which may arise, in case the swelling is very great, and the embarrassment to the pulmonary and renal organs extreme. Even then, although temporary relief may be obtained by the operation, there is every reason to believe that, in the majority of cases, life is in no way prolonged.—*Monthly Journal of Med. Science, Aug.*, 1852, *p.* 166.

47.—*On Congestion of the Liver.* By Dr. George Budd, F.R.S.—[From the researches of Berzelius it would appear that the colouring matter of the bile is analogous to the chlorophyl of plants, and Dr. Budd is inclined to believe that the

different shades of colour of the urine are owing to the further oxidation of the same principle. Dr. Budd believes that the colouring matter of the bile exists ready formed in the blood, and is merely separated from it by the liver. He thinks it probable that the biliary acids "are formed in the liver by the agency of the secreting cells." Bile must be an essential agent in digestion, because a gradual impairment in the digestive process takes place when the common gall-duct is permanently closed. The bitter principle of the bile would seem to prevent the fermentation of the chyme, and the nitrogenized portions of the food from undergoing putrefaction. In speaking of congestion of the liver, Dr. Budd says:]

Congestion of the liver may arise from changes in its tissues, calling for an increased supply of blood, and also from an alteration in the blood itself.

All the matters absorbed by the blood-vessels in the intestinal canal have to pass through it. Its lobular substance is the first filter, if we may so term it, through which the impure liquid must strain. All the alcoholic drinks, all the noxious ingredients that may chance to be present in our food, and such hurtful products of faulty digestion as are readily soluble, are immediately—before they have been diffused throughout the whole mass of the blood, and before they have been submitted to the influence of oxygen—carried to the liver. Amid the continual excesses at table of persons in the middle and upper classes of society, an immense variety of noxious matters find their way into the portal blood that should never be present in it; and the mischief which this is calculated to produce is enhanced by indolent or sedentary habits. The consequence often is, that the liver becomes habitually gorged. The same, or even worse effects, result in the lower classes of our larger towns, from their inordinate consumption of gin and porter.—*Medico-Chirurgical Review, Oct.*, 1852, *p.* 499.

48.—*Treatment of Jaundice.*—[Dr. Budd recommends the following treatment in cases of jaundice arising from suppressed secretion.]

From 3ss. to 3j. of sulphate of magnesia, in conjunction with gr. xv. of carb. of magnesia, and 3ss. of aromatic spirits of ammonia three times a day,—the sulphate of magnesia to keep up free action of the bowels; the carbonate of magnesia to neutralize any excess of acid in the stomach or bowels; and the aromatic spirits of ammonia to support the nervous system, and to keep up the action of the skin.—*Medico-Chirurgical Review, Oct.*, 1852, *p.* 503.

49.—PRACTICAL REMARKS ON THE "STOMATITIS ULCEROSA" OF CHILDREN, WITH CASES.

By Dr. T. W. Mackenzie, Physician to the Paddington Free Dispensary for the Diseases of Women and Children.

[These ulcerative affections in the mouths of infants and young children are often exceedingly troublesome. They may not depend upon any specific cause, but chiefly on debility, with possibly some trivial local affection superadded. Mr. Mackenzie has employed the following simple method of treating the disease with much success.]

The term "stomatitis ulcerosa" sufficiently and accurately expresses the nature of this affection; but in its mode of origin, situation, and extent, it presents many varieties. Thus, in one form, it commences as a small inflammatory spot, either on the frenum of the tongue, the outer surface of the gums, or the mucous membrane of the cheek or lip; but, wherever it commences, ulceration speedily supervenes, attended with febrile disturbance, a coated tongue, profuse salivation, and a disordered state of the stomach and digestive organs. In another form, it is found to be connected with the passage of some of the larger teeth through the gum, more especially when several are about to make their appearance together. In this case, the gum becomes swollen, painful, and dark-coloured; and, after a few days, the portion over the protruding teeth gives way by ulceration, which, in some cases, extends considerably, attended with tumefaction of the mouth and cheeks,

increased salivary discharge, and febrile disturbance. More frequently, however, it commences with a general swelling and irritation of the gums, together with much fœtor of the breath, a coated tongue, and much gastric disorder. Along the upper margin of the gum, or rather that which is in contact with the teeth, a line of ulceration now soon becomes developed; and this, when once begun, rapidly spreads, the gums, at the same time, being spongy, swollen, and very painful. Unless excited by some local cause, such as the irritation of a decayed tooth, it usually commences in the lower jaw, and from thence is communicated to the mucous membrane of the corresponding cheek. The irritation attending it affects the salivary and cervical glands in a remarkable manner; both become swollen, and the former secrete so profusely that the child appears to be constantly dribbling. In this form there is generally some febrile disturbance, and much gastro-intestinal disorder. If severe, it may not only cause destruction of the gums, but loosening of the teeth, suppuration of their sockets, and partial necrosis of the jaw. Its intensity, however, varies very considerably in different cases; in some it is so slight as to require little or no special treatment, whilst in others it can only be controlled by very prompt and energetic measures.

In the general management of these cases, we are directed to employ, locally, strong solutions of the nitrate of silver, or of the sulphate of copper or zinc, with or without astringent, stimulating, or detergent gargles, and to administer, at the same time, quinine, tonics, and a liberal diet. I formerly followed these instructions closely, but sometimes with equivocal success; and I am now, after repeated trials, disposed to give the preference to the following method of treatment. It consists in removing, in the first place, any apparent cause of irritation, such as a decayed tooth, should it exist, and applying, daily, the dilute nitric acid of the pharmacopœia, to the whole of the ulcerated surfaces, by means of a sponge, or camel's hair pencil; whilst, at the same time, the sesqui-carbonate of ammonia is given in full doses, combined with citrate of iron. When the tongue is coated, and the alvine discharges are unhealthy, it is necessary to premise an emetic of ipecacuanha and squills, as well as a purgative of calomel and rhubarb. It is also necessary that the patient should be well supported by a nutritious diet, and an adequate allowance of malt liquor, or wine.

I will briefly add, that the employment of ammonia in these cases was first suggested to me from observing its beneficial effects in the ulcerative affections of the mouth and throat, which occur in children in connexion with scarlet fever. And, alone, it will accomplish a cure, as some of the following cases show, although less speedily than when combined with the citrate of iron and the local application of dilute nitric acid. The latter remedy appears to have a remarkable influence in improving the character of the ulceration and arresting its progress. The sloughy, dirty, yellowish appearance, which it generally presents, is soon changed for a florid, healthy, granulating surface; and this result would appear to depend upon the moderately-stimulating properties of the remedy, which are not disproportionate to the exhausted vital powers of the part. The following cases will serve to illustrate the results of this practice.

Case. J. F—d, aged 3, was brought to the Paddington Free Dispensary, Jan. 3, 1851, suffering from severe and well-marked ulcerative inflammation of the mouth. The gums throughout were swollen and spongy, and the margins adjoining the teeth were deeply ulcerated; the right cheek was swollen and tense, and, internally, the mucous membrane was extensively ulcerated; the breath was fetid, the salivary secretion very great, and the glands, below the jaw, swollen and painful; the tongue was much furred, the appetite bad, the bowels disordered, and the child's appearance generally cachectic.

Treatment. ℞. Ammon. sesquicarb., ferri ammon.-citrat., aa gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acidi nitrici dil. ℥ss.; ft. lotio modo dicto bis die utend.; ol. ricini ℥j. mane p. r. n. s.

Jan. 10th. The child is, in every respect, improved; the gums are looking healthier, as is also the ulceration of the cheek. *Persistet.*

Jan. 11th. The child is convalescent, scarcely any ulceration being any where perceptible.

Case. Mary S—r, aged 4, was brought to the Paddington Free Dispensary,

Feb. 4th, 1851, suffering from ulcerative disease of the gums, throat, and inner surface of the cheeks. She had always been an ailing and delicate child, and had now a very strumous appearance. The disease was first perceived by the mother about a week ago, whose attention was drawn to it by the child's breath being very offensive; and, on examining the mouth, she found it ulcerated as described. The child's appetite is bad, her bowels irregular, and tongue coated.

Treatment. ℞. Ammon. sesquicarb., ferri ammon.-citrat. aa gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acid. nitric. dil. ℥ ss., ft. lotio modo dicto bis die utend.

February 11th. Much better; ulceration generally much less, and looking healthier. February 15th. Quite well.

Case. Edward B—t, aged 2½ years, was brought to the Paddington Free Dispensary, Aug. 1851, suffering from ulcerative disease of the mouth, lips, tongue, throat, and inner cheeks. His breath was offensive, the tongue foul, and the pain produced by the ulceration was so severe that he could neither eat nor drink without extreme suffering. His nights were much disturbed; he was feverish, and the bowels were a good deal disordered. The child had been, for some time, out of health, and indeed never very strong.

Treatment. ℞. Ammon. sesquicarb., ferri ammon.-citrat., aa gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acid. nitric. dil. ℥ ss., ft. lotio modo dicto bis die utend.

Under this treatment the child's mouth got perfectly well in a week; but the medicine was continued for some time longer. On 20th Sept. the child was brought to me again; he was then in possession of perfect health, and the mother told me he was better than she had ever known him to be.

Case. Frances F—r, aged 2½ years, was brought to the Paddington Free Dispensary, Dec. 13th, 1850, suffering from severe ulceration of the gums, lips, and cheeks. She had never been very strong, and had latterly been living in a low, badly-drained house. She had been suffering from the disease for three weeks, and when admitted was weak, pale, and cachectic.

Treatment. ℞. Ammoniæ sesquicarb., ferri ammon.-citrat., aa gr. ijss., quartâ quâque horâ sumend. ex aquâ. ℞. Acid. nitric. dil. ℥ ss., ft. lotio modo dicto bis die utend.

Dec. 23rd. This treatment had been continued for rather more than a week, and the child is now perfectly well.

Case. Hannah W—e, aged 1½, was brought to the Paddington Free Dispensary, July 15th, 1851, suffering from ulceration of the mouth and gums. The child's breath was disagreeable, her tongue coated, and the stomach and bowels disordered. She had been living in a low unhealthy locality, and had been ill a fortnight before applying at the Dispensary, and had been daily getting worse.

Treatment. ℞. Ammoniæ sesquicarb. gr. iijss., sæpe sumend. ex lacte. ℞. Pulv. purg. gr. v., hs. pr. r. n.

July 25th. Ulceration healed, and child perfectly well.

Case. Isaac H—r, aged 11, applied Oct. 1st, 1850, suffering from ulcerative inflammation of the gums and mucous membrane of the right cheek. His father had observed that his breath was very offensive the preceding day, and on looking into his mouth found it ulcerated. The mouth had a strongly gangrenous appearance; the fœtor was very great. He could not masticate without difficulty, and the tongue was furred and excoriated. He was ordered six grains of the sesquicarbonate of ammonia every four hours, in water, and at the same time a nutritious diet, with porter. In a fortnight he was quite well. A brother and sister of this boy were attacked at the same time in a similar way, and recovered, under the same treatment, in about a fortnight.—*London Journal of Med., Oct., 1852, p. 875.*

DISEASES OF THE URINARY ORGANS.

50.—ON THE PATHOLOGY AND DIAGNOSIS OF RENAL DISEASE.

By Dr. George Johnson, Assistant Physician to King's College Hospital, etc.

[Having spoken of a disease of the kidney characterized by a desquamation of the uriniferous tubes, Dr. Johnson proceeds to speak of one of which *non-desquamation* is the characteristic symptom. The particulars of the following case were furnished to Dr. Johnson by Dr. Henry Monckton. John Ager, aged 18, was admitted into the Dreadnought Hospital on the 1st of January, 1850, with rheumatic fever; from this he gradually recovered; but on the 15th of March his legs were found œdematous, his water being scanty and high coloured. Gradually the renal secretion seemed almost entirely to cease, and on the 19th, five days from the first symptom of dropsical effusion being observed, he died. The urine, on the addition of nitric acid, became almost solid with albumen; but no casts of tubes, epithelium, or blood corpuscles, were found in it. These are the phenomena which, in his lecture, Dr. Johnson particularly dwells upon, viz., scanty secretion of highly albuminous urine—scarcely a trace of renal epithelium or of tube casts—and urgent symptoms of suppressed secretion, often terminating fatally. Dr. Johnson then proceeds:]

In order to arrive at the true interpretation of this form of disease, we must again advert to the phenomena of desquamative nephritis:

I have endeavoured to prove that the abundant shedding of epithelium, which characterizes that form of renal disease, is the result of a salutary effort to eliminate from the blood some abnormal products, the retention of which would doubtless lead to injurious consequences, while their ready escape from the blood is probably favoured by the free shedding of the epithelial cells, as the elimination of the scarlatina poison is effected by the desquamation which it excites on the surface of the skin. A consideration of these phenomena suggests the probability, that, in the event of there being conveyed by the blood to the kidney, any of those abnormal materials which are usually eliminated by means of the desquamative process, the *non*-occurrence of epithelial desquamation would be an unfavourable circumstance. The absence of desquamation in such instances is perhaps analogous to those cases of the exanthemata, in which the eruption is either entirely absent, or very imperfectly developed; and this depending not, as it appears, upon the blood being infected by a mild dose of the morbid poison, but upon some failure in the effort to eliminate it by means of the cutaneous eruption; the symptoms of blood-poisoning being meanwhile very urgent, and often quickly fatal. Instances of such an occurrence may occasionally be seen in the case of small-pox; and the case which I quoted in my last lecture from Sir B. Brodie, affords an illustration of what we may perhaps call an abortive carbuncle. Again: it has frequently been observed, that the most rapidly fatal cases of cholera are those in which there is either no purging, or a very scanty secretion from the bowels; the patients quickly sinking either from an excessive dose of the poison, or in consequence of some failure and imperfection in the effort to eliminate it.

With reference to all the instances which I have adduced for the sake of illustration, it is important to distinguish between the essentially beneficial tendency of the primary morbid phenomena and the secondary consequences, which may be injurious and even fatal. Thus, in a former lecture, I alluded to the fact, that an abundant desquamation of epithelium may so fill and obstruct the uriniferous tubes as to arrest the process of secretion within them. A copious eruption of small-pox pustules may destroy the patient by the excessive irritation and the exhausting discharges which they induce; and the abundant discharges produced by the cholera poison will so effectually drain away the watery portion of the blood as to destroy the life of the patient; and yet, in each of these instances, consequences more speedy in their occurrence, and not less serious, would result from the absence of those pathological phenomena which a superficial observer might erroneously consider to be the essence of the disease referred to.

A careful study of these and other allied phenomena, will show the importance of distinguishing the primary and essential cause of a disease from those outward

and visible manifestations of it, which are in many instances the means adopted by nature for the removal of the evil, or for obviating its injurious effects. The distinction is not more important for the purposes of exact pathology than as being an essential condition for the correct and rational treatment of disease. It is evident, for instance, that the notion of scarlatina being primarily and essentially an inflammation of the skin, without reference to the condition of the blood, or the designed end of the cutaneous eruption, would be a great error in pathology, and, appplied to practice, would lead to serious, and even fatal results. The cutaneous heat and redness might be speedily removed by the influence of cold, but injurious consequences would certainly result from the suppression of the eruption.

Before I had learned to recognise this non-desquamative condition of the kidney, and to give to it what now appears to be the true interpretation, I had, on several occasions, based a favourable prognosis upon the idea, that when the urine, though scanty and highly albuminous, is free from sediment, and contains neither casts of tubes, nor renal epithelium, the kidney is in a state of simple congestion or of functional disturbance, and therefore favourable for the patient's recovery. It was only after repeated disappointments, and painful proofs that I had sometimes given a too favourable prognosis, that I succeeded in separating the large proportion of error from the element of truth contained in the idea referred to.

From what has already been said, it will be apparent, that the absence of desquamation is the characteristic feature of the condition of kidney now under consideration. The diagnosis of such cases during life must be based partly upon negative evidence. To the first kind belongs the fact of a scanty secretion of highly albuminous urine, the colour of which is nearly normal, or perhaps somewhat darker and less transparent than usual; while evidence of a negative kind is derived from the observation, that the urine contains neither renal epithelium nor casts of the tubes. The absence of tube-casts is, however, not constant, for in certain cases, which I believe to be essentially of the same kind, as indicated by the absence of all signs of desquamation, the urine contains a peculiar form of tube-cast, the observation of which will assist in the formation of a correct diagnosis.

[Dr. Johnson believes, that in the case above related—if the desquamative process had occurred—the disease might have terminated favourably, believing that the efficient shedding of the epithelium is an important means of eliminating abnormal products from the blood. Having related a case of an acute character, he proceeds:]

I will now give some account of the same condition of kidney occurring as a *chronic* disease. The condition of urine which indicates the existence of the disease in question is commonly as follows:—When first passed, the urine is clear, and either of the natural colour and appearance, or somewhat paler than ordinary. After standing, it deposits no sediment, or merely a slight cloud, composed, perhaps, of pavement epithelium from the bladder. The quantity of urine secreted daily is generally less than normal, and often it is much below the standard of health. The specific gravity varies considerably; it is seldom very low, and often it is up to, or even above, the healthy standard; but the daily discharge of solids by the kidney is almost constantly below the normal amount. The quantity of albumen varies according to the intensity of the disease; but in most cases it is very abundant, so that the urine, when boiled, becomes almost solid. On a microscopical examination, the urine is found to contain neither casts of tubes nor renal epithelium. I have found this to be the case in several instances of the disease. Not unfrequently, however, a careful examination detects some of the small waxy casts which I have before described as found in the urine of Lewis. In some cases, scattered blood corpuscles may be present—but this is not common; and a copious sediment of blood, either in the form of blood-casts of the tubes or otherwise, is still more rare.

The general symptoms which accompany the disease are usually serious in kind and degree. The blood becomes much impoverished by the copious drain of albumen, and at the same time it is poisoned by retained excrement. Dropsy, which is present in almost every case, is often excessive, and very little influenced by any kind of medical treatment. Congestion or inflammation of the

lungs or serous membranes, and symptoms referrible to the nervous centres, such as coma and convulsions, are frequent and often fatal.—*Med. Times and Gazette, May* 29, 1852, *p.* 533.

51.—ON CERTAIN IMPORTANT POINTS IN THE CHEMISTRY AND PATHOLOGY OF THE URINE.

By Dr. Arthur Hassall.

[The following are the results deducible from experiments, some of which are of an interesting and important character:]

1st.—The simple act of boiling an aqueous solution of urea is sufficient to determine the gradual dissolution of that substance, and its conversion into carbonate of ammonia, a result at variance with statements made on this subject, particularly with that advanced by Dr. Bence Jones, and which was particularly adverted to in one of the former of these articles.

2nd.—The conversion of urea takes place, after a time, in distilled water, even without the aid of the spirit lamp, a result likewise opposed to a second statement made by Dr. Jones.

3rd.—The decomposition of urea is effected, either with or without heat, much more readily in fluids which are alkaline, and especially in those the alkalinity of which arises from the presence of lime in any form.

4th.—The conversion of urea is retarded, and sometimes altogether prevented, by an acid condition of the fluid in which it is present; and this is equally the case, whether the solution be subjected to the heat of the spirit lamp or not; the more acid the fluid, the greater its power of resisting the decomposition of the urea.

5th.—Animal matter in a state of decomposition exercises a powerful influence over the transformation of urea; and this it does by producing an alkaline condition of the fluid in which the two substances are contained, the alkalinity being produced by the carbonate of ammonia generated during putrefaction.

It will be observed that this chemical explanation of the action of animal matter, in converting urea into carbonate of ammonia, is much more satisfactory than the vague and theoretical notion of Dumas, that the mucus of the bladder, by undergoing a putrescent change, acts, like yeast, as a ferment, and so aids the conversion of the urea.

The alkalinity of urine very commonly proceeds from the presence of carbonate of ammonia, which is derived in part from the animal matter in that fluid, and in part from the urea; but the circumstances which originate, and either facilitate or retard this conversion, have not hitherto been well understood. We are now, however, in a position to furnish a tolerably accurate and complete account of what these circumstances are. It has been noticed that in some urines the urea disappears in the course of a few days, while in others it remains unchanged for weeks, months, and even years, but the causes of these differences have not until now been satisfactorily determined.

Of urines, some are in a neutral or alkaline state when passed: others quickly acquire one or other of these conditions after being voided; while others, again, do not lose their acidity for a very long period.

Those urines which are alkaline when passed, may be so either from fixed or volatile alkali, or from both combined. In accordance with the results of the experiments described above, an alkaline condition of the blood from fixed alkali would have a tendency to produce a decomposition of the urea, even while contained in the circulating fluid, and so bring about a mixed alkalinity; and this perhaps is one explanation of the occasional presence of carbonate of ammonia in urine but just voided.

Out of the body, there is no question but that an alkaline condition of the urine from fixed alkali facilitates the decomposition of the urea into carbonate of ammonia.

But a more frequent cause of this conversion, and one, indeed, which is more or less in operation in every urine, is the decomposition of the vesical mucus, which, by giving rise to the formation of carbonate of ammonia, produces an

alkaline condition of the urine, which, by reacting in the urea, occasions its transformation, and so increases the degree of alkalinity; and this decomposition of the mucus is in general the first change effected in the passage of a neutral or slightly acid urine to an alkaline state.

The decomposition of the mucus, like that of the urea, varies according to circumstances; thus, acidity and cold tend to retard the change; the amount of animal matter present produces also a corresponding variation.

The influence of vesical mucus in determining an alkaline state of the urine, has been shown by experiment 14; and it may be still further illustrated by putting aside two portions of the same urine, the one filtered, the other not, and noting the periods at which each becomes alkaline: it will be found that the unfiltered urine is always the first to undergo the change.

Those urines which, though acid when passed, quickly become alkaline, are found to be but feebly acid as voided, and to contain a greater or less proportion of animal matter, the natural tendency of which to decomposition is therefore not opposed by the condition of the urine as respects acidity.

Lasty, those urines which are long in becoming alkaline, are always either very acid, or they contain little or no mucus.

Now, as the development of carbonate of ammonia takes place in any urine quickly or slowly, and in greater or less quantity, in a corresponding ratio will the urea be affected, and disappear either quickly or slowly.

The experiments now recorded appear to explain satisfactorily the *modus operandi* of acid remedies in alkaline conditions of the urine, proceeding from constitutional and general causes—viz., by retarding the conversion of the urea into carbonate of ammonia.

They likewise admit of further important and practical application, in connexion with the phosphatic diathesis; but the consideration of this will be made the subject of a separate communication.

To return from this not unimportant digression to the more immediate object of these papers—viz., the consideration of the test for sugar—it appears, then, that in slightly acid, neutral, and alkaline urines, carbonate of ammonia is developed from the decomposition of urine during the application of the heat ordinarily employed in making trial of Trommer's test; and to such an extent as to interfere, possibly, in some slight degree with the proper action of the test.—*Lancet, June* 12, 1852, *p.* 567.

52.—ON CHRONIC DEGENERATION OF THE KIDNEYS, WITH ITS VARIOUS CONSEQUENCES.

By Dr. George Burrows, F.R.S., and Dr. W. Senhouse Kirkes, of St. Bartholomew's Hospital, London.

[The following paper is a general account of the principal phenomena attending the progress of chronic disease of the kidneys. Although many devoted labourers have of late years employed their talents in investigating the relation of the kidneys to dropsy and albuminuria, yet it must be confessed that very much yet remains to be done before the obscurity which attends this subject, shall have been cleared away.]

One thing is certain, namely, that on whatever morbid process the changes observed in a degenerated kidney after death may have depended, the essential result is in every case the same, *i. e.*, the destruction of a greater or less amount of the proper secreting tissue of the organ, which by just so much is rendered useless as an excretory organ. And since no other tissue in the body appears to possess the property of compensating in any way for the destruction of a part of the kidney, by assuming the functions of this organ, it almost necessarily follows that, when either of these glands is, from any cause, seriously diseased, the elements of the secretion which they ought to separate will be retained in the blood. So that whatever be the morbid process by which any considerable part of either kidney is damaged to such an extent as to have its functions temporarily or permanently suspended, there will equally result an accumulation of the constituent parts of the urinary secretion in the blood, and a train of morbid

phenomena indicative of a poisoned state of this fluid will in consequence ensue. It seems highly probable that nearly all the secondary disorders by which the progress of chronic renal disease is characterised, are directly dependent upon the morbid condition produced in the blood by the retention of the various noxious and excrementitious principles, especially, perhaps, the urea, which ought to be separated from it at the kidneys. The constant existence of these excrementitious materials in excess in the blood must be productive of mischief in various ways, partly by rendering this fluid a source of irritation to all parts through which it circulates; and partly, perhaps, by interfering with its own power of self-maintenance or assimilation, whereby it in consequence gradually becomes poor, and thin, and impoverished, and, while in this state, is ill-adapted for the nutrition of the various parts of the body, besides being liable to transude through the coats of its containing vessels, and so to produce various evils in different parts.

Although we are confessedly in much ignorance respecting the real pathology of morbus Brightii, or granular degeneration of the kidney, yet the symptoms of the local disease, and the various secondary disorders to which the vitiated and impoverished blood give rise, are so striking, and so readily apprehended in the present day, that there are, perhaps, no chronic diseases of internal organs which may be recognised with greater certainty, during life, than those of the kidney. The simple detection of albumen in the urine will often clear up the obscurity of a chronic and perplexing case, and throw light on a multitude of ill-defined and otherwise unintelligible symptoms. The cases and remarks in the present papers will be offered with the view of illustrating some of the main features by which the various forms of chronic renal disease, attended with albuminuria, are characterized. The case to which attention will be first directed, is one which seems to offer a good general example of the disease, watched from its commencement to its termination,—marked, in its progress, by many of the important disorders which usually accompany this disease, and displaying, after death, most of the pathological appearances observed in fatal cases of degenerated kidney.

Case. Robert Pinkerton, aged 40, was admitted into John ward, under Dr. Burrows, early in June, 1851. He was a stout, muscular man, but with a pallid, doughy aspect, and slight anasarca of the lower limbs; his skin was warm and moist; pulse 72, soft; bowels regular; urine scanty, slightly acid, sp. gr. 1022, and highly albuminous; he had some cough and shortness of breath, and a feeling of general illness, with inability to work. He was quite free from pain in the loins. A painter and glazier by trade, he had been engaged during the spring in glazing the roof of the Exhibition-building in Hyde Park, and frequently had to work many hours beyond the ordinary time. While walking to his work one day, he got wet through, and had to continue in his wet clothes till his return home in the evening. Before night, however, he felt chilly and stiff, and next day noticed his ankles to be swollen. Still he walked to his work, and continued at it for the next four days, when he was obliged to give in on account of the increased swelling of his legs, which rendered him almost unable to walk. He then became an out-patient at the hospital, and continued to attend for nine weeks, at the end of which time, as the dropsy still continued, he was admitted into the wards. Upon his admission, he assured us that he considered himself in good health up to the day when he was exposed for so many consecutive hours to the effects of cold and moisture combined. It therefore appeared reasonable, that, as his complaint had commenced after prolonged repression of the cutaneous functions, so his treatment should be directed to the restoration of these functions. Diaphoretics were accordingly prescribed, consisting of warm baths and a draught of acetate of ammonia, with half a drachm of antimonial wine and spirits of nitre four times a day. From this plan of treatment, especially from the baths, he appeared to derive great benefit, perspiring freely—whereas, since the commencement of his illness, his skin had been almost constantly dry—and the anasarca of the legs sensibly subsided. In about a week, however, he became more feverish, and had an increase of cough and tightness in the chest, which, on auscultation, was found to proceed from a slight attack of bronchitis. A blister to the chest relieved these symptoms, and, in another week, he was able to leave his bed, free from cough, and with scarcely any anasarca, yet still ailing, and

his urine largely albuminous. He was now placed on meat diet, and took five grains of citrate of iron three times daily; on which plan he continued during the remaining five weeks of his stay in the hospital, the use of a vapour-bath every other day being added, to promote the action of the skin, and an issue made and kept open in the arm. This latter remedy was employed with the intention of establishing a permanent puriform discharge, which might, in some slight degree, act vicariously and compensatory to the vascular system of the impaired excretory functions of the kidneys. On his discharge, early in August, two months from the period of admission into the hospital, there was still slight œdema of the ankles, and his urine was almost as highly albuminous as when he first came under notice, its specific gravity varying from 1015 to 1020; yet there was a manifest improvement in his general health, and he considered himself sufficiently well to resume his employment.

The complete absence of all evidence of previous disorder of the urinary system, together with the immediate supervention of dropsy upon prolonged exposure to the combined influence of cold and wet, seemed together sufficient to justify the assumption, that the renal disease, on which the albuminuria and dropsy depended, was of comparative recent date. In this, as in every other case of the kind, it would of course be almost impossible to pronounce with any degree of certainty on the previous healthy condition of the kidneys, remembering how insidiously structural disease may creep upon these organs; yet, the suddenness with which the symptoms ensued in a man previously in good health,—the analogy afforded by many instances of dropsy after scarlet fever,—the comparatively high density of the urine (1022) which is rarely observed in advanced stages of degenerated kidneys,—and the absence of the more striking secondary disorders, such as affections of the serous membranes, protracted diarrhœa, and tendency to cerebral substance, so commonly observed in long standing diseases of the kidneys, made it probable that, up to the time of his being attacked with dropsy, this man's kidneys were in a comparatively healthy state. The absence of febrile symptoms, and of pain across the loins, which so commonly accompany a recent attack of inflammatory dropsy, may be explained by the fact of the disease having been in progress for nine weeks, and under treatment all the time; while the peculiar pallor of the man's skin, which at first might seem to militate against the view just expressed concerning the duration of the renal disease, is rendered quite intelligible by what is often seen in dropsy after scarlet fever, where the impoverishment of the blood appears to take place so rapidly, that the blanched anæmic state of the integuments and several tissues, is almost coincident with the development of the dropsy.

In November of the same year, rather better than three months after his discharge, this man was again admitted into the hospital, under Dr. Burrows, with an aggravation of all his previous symptoms, being now generally anasarcous, very weak, troubled with difficulty of breathing and cough, and with his urine highly albuminous, pale, and reduced in density to 1008. Again, by means of diaphoretic draughts and the vapour baths, the functions of the skin were called into play, and the dropsy and attendant distress began to subside, yet his breath continued short, and there was a gradually increasing difficulty of lying on the left side. At first, auscultation proved nothing beyond deficiency of breathing and impaired resonance at the lower part of the right side of the chest behind; but in a few days, with the increase of dyspnœa, the lower part of each lung behind, especially the right, was found dull on percussion, and scarcely any respiratory sounds were heard in these parts; while, about the inferior angle of the left scapula, and towards the axilla, a distinct pleural friction sound was detected. There was now evidence of the case being complicated by effusion, probably of an inflammatory character, in each pleura; and it may be observed here, that the pleural friction sound, which was at first noticed on December 3, continued to be heard on the left side, frequently also on the right, whenever the man was auscultated,—which he was once or twice a week,—until the 12th of the following April, a period of more than four months. Together with this physical evidence of mischief in each pleura, there were also frequent darting pains in the sides, with persistence of cough and shortness of breath. He suffered, too, from frequent violent pains in the head,—another not uncommon symptom of advancing

disease of the kidneys. For about three months after his second admission to the hospital, the treatment consisted principally of the vapour bath, repeated blisters to the chest, a diaphoretic draught (containing salts of potash, in combination with vegetable acid) three or four times a day, an occasional hydragogue purgative, and a generous diet, with a little wine. During all this time, however, there was little amendment; the anasarca certainly subsided a little, the fluid in the chest seemed to diminish, and the urine increased both in quantity and specific gravity; but there was no material improvement in the man's general health, and he was unable to leave his bed. His bowels also became irritable towards the end of this period, and he suffered from nausea and occasional sickness. About this time, too, he became very heavy and drowsy, occasionally passing almost into a state of stupor, while subsequently the stupor gave place to a kind of delirious excitement, which lasted for three or four days. Towards the end of February, 1852, the dropsy being again on the increase, and his dyspnœa and general distress being greater, he was ordered ten grains of gallic acid three times a day, a mutton chop for his dinner, and a little brandy and soda water to allay his occasional vomiting. In a week from this date it is noted that his condition is improved; the anasarca less, the daily quantity of urine increased from one pint to two, its sp. gr. 1020, and the amount of albumen in it less.

The weekly notes from this time until his discharge, early in May, 1852, during the whole of which period the use of the gallic acid was persevered in, together with the employment of the open blisters, show a progressive and almost uninterrupted improvement in all his symptoms: the anasarca steadily diminished, so that on his discharge there was scarcely any left; the daily quantity of urine averaged three pints, though it still remained charged with albumen; the pleural friction sound gradually disappeared, and the man's appetite, strength, and spirits were materially improved; and, as the warm weather advanced, he left the hospital with a fair prospect of getting pretty well through the summer.

In another month, however, he was re-admitted in a dying state, having been attacked the day after his discharge with diarrhœa, which never afterwards left him. On this his third and last visit to the hospital, he was greatly changed: his face pale and haggard; his tongue coated with a brown fur, red down the centre and at the tip; pulse 108, sharp; his bowels almost constantly acting, the evacuations consisting chiefly of shreddy mucus, occasionally mixed with blood; and, to add to his misery, he had almost constant hiccough, which had distressed him for a fortnight, and frequent vomiting, especially after food; his urine was very scanty, sp. gr. 1010, still highly albuminous.

He was ordered: Conf. aromat. 3ss., tinct. catechu 3i., tinct. opii ℥ v., aq. cinnamomi ℥iss. 6tis horis.

The next day (June 3), the diarrhœa being unchecked, and the singultus equally distressing, he was ordered:

Enema amyli c. tinct. opii ℥xv.; catap. sinapis epigastrio; brandy ℥ iij., beef-tea Oj.

4th. No sleep; constant hiccough remains, and distresses him much; he is frequently sick, vomiting a bilious fluid; the bowels continue purged, the evacuations scanty, watery, and yellow, and occasionally containing blood.

Ordered: Acid. gallici gr. x., acid. hydrocyan. dil. ℥vj., tinc. opii ℥x., ex. aq. pimentæ, 4tis horis. Empl. canth. epigastrio. Enema amyli c. tinct. opii h. s.

Towards evening the hiccough became very violent and distressing, and Mr. Wood administered a draught, containing ten minims of chloric ether, which produced very marked relief, and was followed by a few hours' tranquil sleep. The following day he was in less distress, and the hiccough was much less frequent

During the three subsequent days, he remained in nearly the same state, the hiccough continuing, but less severe; the diarrhœa rather abated; his aspect pale and pinched; sordes collecting about his teeth.

On the 9th he was evidently sinking; his breathing oppressed, sordes more marked, voice feeble, hiccough entirely ceased, and the diarrhœa almost subsided. He lingered on till the morning of the 11th, kept alive by wine and constant attention, and preserving his consciousness till the last, death ensuing apparently from simple exhaustion, without any cerebral symptoms.

The body was examined eight hours after death. It was very pale, and slightly

anasarcous below; the tissues exhaled a urinous odour; the heart was much enlarged, especially its left ventricle; the valves and muscular tissue were healthy.

There was about an ounce of pale opaline fluid in the sac of the pericardium, while on the visceral layer of this membrane were one or two white patches of old lymph, together with a general milkiness of the surface, which seemed to indicate a previous inflammatory condition of this membrane; the coats of the aorta were much diseased; the lungs were congested and œdematous, but apparently healthy in texture. In both pleuræ were numerous vascular bands of fibrous tissue connecting the opposite surfaces together, while each lung was surrounded almost completely by a thin layer of tough old false membrane. In the peritoneal cavity, also, there was evidence of former inflammation in a peculiar milky appearance of the serous coat of the intestines, and in a false membrane surrounding the liver, and connected by bands of old adhesion to the diaphragm and adjacent parts. The false membrane enveloping the liver had compressed this organ, and given it a peculiar rounded form, and reduced it much in size; the spleen was very small, pale, and soft; the stomach and small intestine were healthy; the large intestine, with the exception of the cæcum, which was healthy, presented along its entire inner surface the evidence of dysenteric ulceration, the mucous membrane being eroded and worm-eaten by superficial ulceration, and variously coloured by patches of vascularity and films of grayish-looking material, composed apparently of fibrinous exudation or superficial sloughs of the mucous surface. The kidneys were remarkably compressed and flattened by the peritoneum, which was unusually firm and dense in the lumbar regions; the organs were small, very pale, and almost devoid of blood, the cortex being especially anæmic, shrunken, and narrow, slightly roughened on the surface, though without any obvious deposit, the cut surface presenting a smooth, homogeneous, pale yellow, bloodless appearance; the medullary structure appeared healthy, but was compressed, and of a pale flesh-red tint. There were several minute cysts in the cortex. Everything in the general appearance of the organs was indicative of a bloodless and atrophied state of their tissues, especially of the cortical part, and the results of microscopic examination tended to confirm this view; for of the few urinary tubules which could be discovered, the majority were very narrow, their interior destitute of proper epithelium, and their walls compressed and distorted by the coarsely fibrillated material within which they lay, and of which the principal part of the cortex was composed.

It is rare, in hospital practice, to have so good an opportunity of watching a chronic disease through all its phases unto death, as was afforded in this case. The man came under notice soon after the onset of symptoms, which, in all probability, were coincident with the commencement of his renal disease; he was under almost constant observation for upwards of a year, during which period most of the characteristic symptoms of advancing degeneration of the kidneys, from time to time manifested themselves; at length, being cut off by an attack of dysentery, an opportunity was afforded of seeing the ravages which the disease had committed primarily on the kidneys, and subsequently on other parts of the body. It seems to be now generally admitted, that if an attack of acute or febrile dropsy be not speedily subdued by appropriate treatment, there is a great chance of the subsequent developement of symptoms indicative of chronic and apparently incurable disease of the kidneys. The case just related seems to bear out this view, the disease beginning with symptoms of inflammatory dropsy, which appear to have been never thoroughly controlled, and terminating with many of the signs of structural damage to the kidneys. Of the several secondary disorders by which the progress of chronic renal disease is usually characterized, the most prominent are dropsy, catarrh, a low kind of inflammatory affection of the serous membranes, disorders of the alimentary canal, consisting chiefly of dyspepsia, vomiting, and diarrhœa, and a tendency to serious and often fatal cerebral symptoms. Without exception, every one of these secondary affections displayed themselves in various degrees in the progress of the case under consideration. The details of them have already been given, and need not be recapitulated. The long duration of the pleural friction sound, during life, with the evidence of extensive fibrinous exudation discovered within the pleura after death, are worthy of note. The very obvious benefit resulting from the use of gallic acid, during the man's second visit to the hospital, is likewise deserving of special remark. Without at present con-

sidering either the general treatment or the pathology of chronic renal disease, it may be offered as a suggestion, whether the marked improvement attending the employment of gallic acid in this, and many other cases of renal dropsy, may not be due to the astringent property of this remedy, whereby the transudation of the serum of the blood, and the escape of albumen through the kidneys, are in some measure controlled.

Of the morbid appearances found after death in this case, attention may at present be directed merely to those in the kidneys, the heart, and the large intestine. The condition of the kidneys was somewhat peculiar. Their small size, pale and anæmic aspect, dryness, compactness, and smoothness on section, together with the absence of any decided granular deposit, incline one to regard their morbid state as one of simple atrophy, rather than of granular degeneration. This is not a common condition in which to find the kidneys after renal dropsy, the congestion or other morbid process to which they have been previously subjected, usually resulting in the deposition of new material, and not in simple wasting and atrophy of the component tissues of the gland. The permanent damage done to the secreting part of the organ, and the secondary mischief, falling, in consequence, upon the system at large, will, however, in either case, be nearly the same. Of the morbid state of other organs associated with chronic disease of the kidneys, none are more common than enlargement of the left side of the heart, often noticed quite independent of valvular disease or other manifest cause of local obstruction. In the present case, the valves were quite healthy; and, although it may be a question how much of the hypertrophy noticed in the left ventricle was due to the roughening and inelasticity of the coats of the aorta, yet the occasional absence of this cause also in other similar cases, makes it more than probable that the enlargement of the left side of the heart was in chief measure dependent upon the morbid state of the blood, in consequence of which the transit of this fluid through the capillaries is effected with less facility than when its composition is unimpaired. Although protracted diarrhœa is a very common feature in chronic renal disease, yet it is rare for this complication to hurry off the patient so rapidly as in the present case, and to leave traces, after death, of extensive dysenteric ulceration of the large intestine. It may, indeed, almost be questioned whether the dysentery was in any other way associated with the renal disease than as an accidental complication ensuing in a subject already greatly reduced by upwards of a year's continued illness, and unable to contend against an enemy which, under circumstances of previous health, might have been successfully resisted.—*Med. Times and Gazette, Oct.* 16, 1852, *p.* 377.

53.—ON DIABETES.

By Professor Bennett.

The excretion of sugar in large quantities by the kidney, has for a lengthened period excited the attention of pathologists, and given rise to abundant speculation. It having been shown by Mr. Macgregor of Glasgow, that sugar was formed in the stomach from the digestion of food, while that principle was subsequently detected in the blood by the same observer, as well as by Ambrosiani, Maitland, and Percy, —the view of Rollo was, on the whole, considered the correct one, and the treatment he proposed has been, in its main features, followed by subsequent practitioners. This theory supposed that the sugar found in the stomach and alimentary canal, from the starchy and saccharine principles of the food, instead of being rapidly converted into other compounds, as it was supposed to be by Prout, was absorbed into the blood, and excreted by the kidneys. The treatment based upon this theory was, therefore, directed to keeping up nutrition from substances incapable of being converted into sugar; and it is worthy of remark, that such treatment has greatly diminished the excretion of sugar, without, however, suppressing it, and has also ameliorated the other symptoms. The researches of M. Bernard have introduced other views as to the origin of sugar in the animal economy. He admits that sugar may be formed in the process of digestion, and that a certain amount of it may, as a result of absorption from the alimentary canal, find its way

into the blood. But he has shown that in dogs fed entirely on animal food, sugar may be demonstrated to exist in the liver and in the blood of the hepatic vein, while it is absent in the portal vein. Moreover, he has shown that sugar is a normal secretion of the liver in all animals, from man down so low in the scale as the mollusca; and that, moreover, it is secreted by the liver of the fœtus. He has proved experimentally, that this function is increased and diabetes produced, by irritating the eighth pair of nerves at their origin in the fourth ventricle; while, on the other hand, section of these nerves destroys its formation. I have seen M. Bernard perform these experiments, and repeated them myself in this city, and have no doubt regarding the accuracy of the results. That sugar does not exist normally in urine and blood drawn from the arm, is explained by its rapid decomposition in a state of health, and its excretion by the lungs. But when so increased that the lungs cannot secrete the whole of it, then it passes off by the kidneys, and hence diabetes. It follows that this disease is of hepatic origin, and is capable of being excited artificially, by irritation of the eighth pair of nerves, although in man this and other causes have not yet been determined.

This theory of M. Bernard explains why Rollo's treatment diminishes the excretion of sugar, by cutting off all that enters the blood through the alimentary canal, and further explains why such treatment does not cure, because it fails to affect the hepatic organ. It appears to me also capable of throwing light on the good effects of opium, from its power of diminishing nervous irritability—effects which are universally recognised in this disease. No other practical results, however, are as yet derivable from it, inasmuch as we are completely ignorant of any therapeutic means capable of diminishing this secretion, when once found in excess. Further researches are required on this point, so that the attention of practitioners, no longer *exclusively* directed to the digestive organs, may, by new efforts, endeavour to control this singular disorder.

The diet ordered in this case is one which admits of very slight formation of sugar in the alimentary canal, and, together with opiates and the occasional use of the warm bath, is the best which has hitherto been adopted. Its good effects were well manifested, although it proves, in conjunction with the confinement of an hospital, very irksome to the patient.—*Monthly Journal of Medical Science, August*, 1852, *p.* 167.

54.—ON BRIGHT'S DISEASE OF THE KIDNEY.

By Prof. Christensen.

"*Symptoms of Bright's Disease, which, taken alone, might simulate other Diseases.*"—Professor Christensen, a Danish physician, who has already published several important memoirs on Bright's disease, has just published a paper bearing the above title (in the Hospital's Medeleser, vol. 3, part 5).

That the primary pathological condition in Bright's disease lies in the blood is obvious from its morbid products, namely, the exudation of an albuminous fluid into the cellular tissue and the serous and mucous membranes; it is likewise shown in rarer cases by the retention of urea in the blood. This morbid secretion from the blood into the different parts of the body does not by any means occur simultaneously; it sometimes only presents itself in one part, but is more commonly followed by effusions into other parts or organs; moreover, if the effusion into one organ be suspended, it usually commences in some other part. Hence it is obvious that the symptoms may be very various, and that many phenomena which we might expect in the ordinary form of this disease, may be absent, so that unless a proper examination of the urine be instituted, grave errors of diagnosis may be made. Christensen observes, that the symptoms which may simulate other diseases, are especially those of the brain, the air-passages, the stomach, and the intestine.

Cerebral symptoms are a consequence of retention of urea in the blood when the urinary secretion is suppressed or diminished, although it may sometimes occur when there is scarcely any apparent diminution of the quantity of urine. In these cases chemistry reveals the presence of urea in the blood to a very considerable quantity, and occasionally a lesser quantity in the other fluids of the

body. The morbid changes which the kidneys undergo in Bright's disease, may give rise to a suppression of urine, and if this suppression be gradual, the cerebral symptoms also come on gradually, and a peculiar apathetic soporous condition is observed. The blanched, and often somewhat puffy, cachectic countenance, has a peculiar expression hard to describe; the pupils are normal, or rather dilated, but are torpid in contracting. When the disease is slowly developed, there is occasionally a little wandering and mental disturbance (the quieter form of delirium); when it advances rapidly, there is delirium of a much more marked, although never of a furious, character. Hallucinations do not seem to occur, but there is often loss of consciousness. An involuntary and shrill scream is often uttered; and we sometimes observe a peculiar grasping action of the hands, or a fighting-like movement of the arms. There are also involuntary movements of other parts of the body, especially of the head; and convulsions of the muscles of the face are by no means rare. At length a comatose state supervenes; there is prolonged, tracheal, laborious, and sometimes stertorous respiration; and deglutition becomes very difficult, or is altogether impeded. The pulse is very uncertain, often slow (not above 60), never very rapid, usually about 100 in the minute. The excretions are passed involuntarily.

Of the symptoms connected with the air-passages, the most prominent are a peculiar laborious respiration, something like that which occurs in croup, but more closely resembling that which accompanies syphilitic ulceration of the larynx. There is more or less dyspnœa, but cough is not invariably present. On auscultation we detect a widely distributed sonorous and blowing rhonchus in the lungs, which can often be heard at some distance. The anatomical indications of this condition are merely a diffused redness and puffiness of the mucous membrane of the air-passages. This affection of the trachea and bronchi is often combined with dropsy and other symptoms of Bright's disease; and as one symptom often acts vicariously to another, so an attack of this kind of bronchitis often takes the case of vomiting or diarrhœa, or becomes more intense when the œdema diminishes.

Gastric and intestinal symptoms.—Although vomiting and diarrhœa are amongst the most frequent of the symptoms which characterise Bright's disease, either or both are very rarely the only symptoms. Christensen has only seen six instances of this nature in several hundred cases. The vomiting rapidly debilitates patients; and if it is not rapidly supplanted by some other symptoms, as diarrhœa, a severe attack of bronchitis, well-marked œdema, or increased diuresis, it may prove fatal in a week. In one case the vomiting continued at intervals for a year and a half, in another case for about half a year. At first the vomited matters consist chiefly of mucus, but in a later stage they contain bile. The vomiting, unless when very continuous and severe, is unaccompanied by any very marked pain in the gastric region. Hiccough and eructations sometimes occur. Diarrhœa is one of the mildest symptoms of Bright's disease; and the author believes the extensive mucous surface of the intestinal canal separates and removes a large quantity of morbid secretion; and thus relieves other organs. As the diarrhœa depends on a simple exudation of albuminous fluid, without any inflammatory process, it gives rise to no pain; sometimes, however, a diphtheritic inflammation of the lower part of the ileum or of the colon is simultaneously present. Unless the latter complication is present the intestinal discharges are not mixed with blood or mucus, but are merely their liquid excrement. We have only space to notice the *first* of the *six cases* recorded by Christensen. In this case vomiting was the predominating symptom. The patient was supposed to be suffering from a slight attack of typhus, and his urine was not examined. On dissection, it was found that the cortical substance of the kidneys was hypertrophied, and that the pyramidal bodies were much atrophied; the tissue was hard, firm, and pale. The urine found in the bladder contained much albumen.—*Schmidt's Jahrbücher für* 1852, No. 2.—*Prov. Med and Surg. Journal, Sept.* 15, 1852, *p.* 484.

55.—ON THE TREATMENT OF NERVOUS AFFECTIONS OF THE BLADDER.

By Dr. S. D. Gross, Professor of Surgery in the University of Louisville, &c.

[Irritability and neuralgia of the bladder have many points in common; indeed, few authors devote a distinct chapter to the latter affection. Neuralgic affections of this organ, in America, however, seem very common. Neuralgia of the bladder is described by Dr. Gross to have many symptoms in common with neuralgia affecting other parts; sometimes the pain is located in one spot, at other times it extends to neighbouring organs. There is frequent desire to pass water, and the urine is thrown out in jets, and in small quantity; a distressing soreness is left behind in the urinary passages. A systematic course of cathartics seems most beneficial. If the disease be complicated with amenorrhœa, the cathartics should be combined with aloetic and emmenagogue preparations.]

Carbonate of iron has been extensively used by Dr. Gross, and with some success; but he expresses his belief, that when neuralgia arises from malaria, quinine and arsenic are vastly superior to all steel preparations. After proper purgative medicine, with or without general bleeding, quinine is to be administered in four-grain doses, every three hours, until fifteen or twenty grains have been taken. It is then to be discontinued until the next day, when it is to be renewed, and the same quantity is to be taken in the twenty-four hours, when, in all probability, the paroxysms will have either ceased, or else abated very much in violence.

Larger and more frequent doses of quinine are objectionable, on account of the distress which is apt to be produced in the head. Dr. Gross then goes on to say:

"When the disease has been thus moderated or subdued, the best medicines to eradicate it are arsenic, strychnine, and aconite, in union with opium. The formula which I have been in the habit of using for many years past, both in vesical and other forms of neuralgia, is the following:

℞. Acid. arseniosi, gr. ij.; strychninæ, gr. j.; ext. aconite, gr. viij.; pulv. opii, gr. v. M.

"These ingredients should be incorporated with each other with the greatest care, and be divided into sixteen pills of equal size, of which one is to be administered every six hours, or four in the twenty-four hours. In some instances, the opium may be advantageously increased, or where it disagrees with the patient, it may be replaced by lupuline, or hyoscyamus. When nausea ensues, the pills are to be used less frequently, or instead of giving one pill at a dose, only one-half or two-thirds of one should be employed at a time. Attention to this point is a matter of paramount importance, as it respects the benefit to be derived from this combination. Another rule is, not to continue the exhibition of the pills longer than a week or ten days at a time, to allow the stomach a short recess, when they are to be resumed, and taken as before. When administered with these precautions, arsenic, strychnine, and aconite seldom fail to produce a most favourable impression, and are often, of themselves, sufficient to effect a cure. When this is not the case, they should be employed with other remedies, of which purgatives and the warm bath are amongst the most efficacious. With Fowler's solution of arsenic, so much vaunted in the treatment of this affection, I have but little experience; but I have given it sufficiently often to satisfy me that it is far inferior, in every respect, to arsenic in substance. It is more liable to nauseate, and does not exert the same controlling influence in arresting the disease.

"To moderate the violence of the paroxysms, large doses of narcotics are frequently indispensable. Of these the best are the salts of morphia, either alone or in combination with nauseants, according to the state of the vascular system. In some instances, where other means have failed to afford relief, I have derived the greatest benefit from the steady, persistent use of narcotics. I might, indeed, cite several cases in which the protracted exhibition of this class of remedies resulted in a radical cure. My rule is to give narcotics in full and sustained doses, taking care always previously to clear out the bowels, and restore the

secretions. Where one article, or mode of exhibition, is found to disagree, another should be substituted. When the pain is very violent, or when narcotics cannot be taken by the mouth, opiate injections or suppositories should be used.

"An emetic of ipecacuanha, or tartrate of antimony, at the approach of the paroxysm, will sometimes have the effect of cutting it short, or materially abridging it. The remedy is particularly indicated when the disease is associated, as it often is in malarious districts, with gastric and biliary disorder.

"Much benefit may also accrue, in many cases, from the warm bath, or the application of steam to the affected part. This can be readily effected by connecting one end of a gum-elastic tube with the spout of a tea-kettle, filled with hot water, and placing the other under the bed-clothes. Fomentations with hops, opium, or laudanum, will also be highly serviceable."—*Med.-Chir. Review, July, 1852, p.* 78.

56.—*On the Treatment of Paralysis of the Bladder.*—[The following remarks are taken from the review of the works of Dr. Gross and Mr. Coulson on 'Diseases of the Bladder, &c.,' in the British and Foreign Medico-Chirurgical Review, July, 1852.]

A clear and practical distinction can be established between paralysis of the neck of the bladder and paralysis of the body of that organ; the first form being attended with incontinence, the second with retention. But we are apt to believe that this difference is hardly sufficiently attended to by many persons.

After an able division of the various forms of paralysis of the bladder, Dr. Gross goes on to speak of the treatment. He cautions the surgeon against evacuating the whole of the urine, accumulated in an over-distended bladder, at one time, as he is satisfied that he has seen several patients die from the severe depression induced by the sudden removal of the distension. In all such instances, he allows a small quantity of urine to remain in the bladder; and also applies a bandage to the abdomen, as after tapping or parturition. Cathartics he considers to be of the utmost service in all descriptions of paralysis of the bladder; and of these, calomel, with castor oil and turpentine, is his favourite. Emetics also are not to be neglected. Of remedies acting especially on the nervous system, strychnine, cantharides, and arnica, are the most potent, and are best given in the following formula:—Strychnine 1-16th of a grain, cantharides 1-8th of a grain, arnica from 3 to 5 grains three times in the twenty-four hours. Of arnica in paralysis of the bladder from fever, masturbation, and general exhaustion, Dr. Gross speaks very favourably. He prefers the tincture in doses of from forty to sixty drops thrice daily. The ergot of rye, much commended by some, has not supported its reputation in Dr. Gross's hands. Counter-irritation, such as a succession of blisters over the dorso-lumbar region, is useful in almost all but the inflammatory form of vesical paralysis The actual cautery is also a proper remedy.—*Medico-Chirurgical Review, July, 1852, p.* 82.

57.—NOCTURNAL INCONTINENCE OF URINE.

By M. Trousseau.

M. Trousseau observes that the nocturnal enuresis of children and young persons takes place after they have been asleep one or two hours, and that they retain the urine during the rest of the night. As a possible explanation of this, he refers to the fact that there is erethism of the genital organs during the commencement of sleep; and asks then, whether there may not be a tenesmus of the bladder? But, he further asks, why should not the sphincter then tend to retain the urine?

M. Trousseau speaks highly of the treatment by belladonna, as recommended by MM. Brettonneau and Morand. In almost every case in which he has used it, he has found it successful.

The organs must be caused to lose their bad habits; and this may be done by awakening the children after they have slept an hour, in order that they may

urinate. On the next night they are awakened a few minutes later, and the time of awakening is made later every night, until at last it is desisted from. This has sometimes effected a cure.

At the same time, pills containing a *centigramme* of extract of belladonna are given; a week after the quantity is raised to two, and then to three, rarely to five *centigrammes*. The child is now roused only on alternate nights, and if it has not wet its bed on those nights when it has been left asleep, it is not awakened; if it continues free from enuresis for a fortnight, the dose of belladonna is diminished. If the case goes on favourably, the treatment is alternately resumed and intermitted for some weeks, until it is finally left off. This is necessary, as the disorder may return after some months, in the manner of marsh fever.

In cases of incontinence of urine, eczema of the vulva or prepuce may be produced by irritation of the urine: it may then extend to the meatus urinarius, and cause tenesmus of the bladder.

If belladonna fails, the syrup of sulphate of strychnine is sometimes found useful. If these fail, flagellation and stinging with nettles may be useful, as instruments of intimidation, or perhaps they may have some reflex power.

M. Trousseau finally describes an oval compressor, which he has devised for the treatment of nocturnal enuresis.

An elastic band is fixed round the body, and supports at the back a spring which reaches to the anus. To this is fitted a metallic plate, on which is fixed a truncated cone of caoutchouc, two or three *centimetres* (about two-thirds to an inch) in diameter at the base, according to the age of the patient, and the amount of compression required. The pressure may be increased or diminished by introducing the cone more or less deeply; and the size is varied by adding perforated shields of caoutchouc, in greater or less number, so as to diminish the length of the cone. Straps are passed under the thighs; and thus we have a light bandage, in no way inconvenient, which in boys acts in some way as a sphincter, by compressing the neck of the bladder and preventing the urine from escaping, and imparts to the bladder the habit of remaining full during the night as well as during the day.

But as this method could only be applied in girls *per vaginam*, and then with great difficulty, M. Trousseau employs a modification of the instrument contrived by M. Gariel for arresting uterine hemorrhage. It consists of a caoutchouc bag, which is introduced beyond the hymen: by means of a tube it is inflated with air, and a stopcock attached to it is closed. The back presses on the lower part and neck of the bladder; and in the morning the instrument, having been emptied of air, is taken out and cleaned.—*London Journal of Medicine, Oct.*, 1852, *p.* 928.

58.—*On the Administration of Sal Ammoniac in Enlarged Prostate.* By M. Vanove.—M. Fischer, of Dresden, has long been in the habit of administering this medicine, in large doses, in chronic enlargement of the prostate; and since he published an account of his success with it in 1831, various other German practitioners have supplied corroborative testimony. Seeing that surgical treatment is so inefficient, this means would seem to supply a valuable resource, and this especially as it may be employed in conjunction with other remedies. In the present paper, M. Vanoye relates two cases in addition, in which the success obtained seems quite to justify former encomiums. In both, the gland became progressively and greatly diminished in size. Large doses are, however, required. We may commence with fifteen grains every two hours, and go on to double or treble this quantity, so that nearly half an ounce is taken *per diem*. When the dose given is too great, we are admonished by disorder of the digestive organs, a miliary eruption, profuse sweats, and especially by scorbutic symptoms. These ill effects may be prevented or diminished by the employment of mucilaginous vehicles, bitter extracts or aromatics, and a good animal diet. Persons suffering from hemorrhagic disposition, or affections due to poverty of blood, should not be subjected to this treatment.—*Bulletin de Thérapeutique.—Medico.-Chirurg. Review, Oct.* 1852, *p.* 557.

59.—*On the Habitual Presence of Sugar in the Urine of the Aged.*—The 'Gazette Médicale' of last month contains an article on this subject, which is suggestive of important reflections on the pathology of diabetes. Our readers will remember the researches of MM. Bernard and Barreswill, which seem to prove that sugar exists normally in the urine, whatever diet be used, and that this saccharine elaboration by that organ is dependent upon the action of the pneumogastric nerve. A further question must, however, be appended to this discovery, viz., what becomes of this sugar after it has gained access to the general circulation? What is its use, and how is it eliminated? Although differing in their opinions on some points of this inquiry, most physiologists agree, that it is eliminated by combustion in the lungs, and one, M. Reynoso, has further sought to establish (Provincial Journal, Jan. 7), the fact, that when the respiratory process is impeded, sugar is excreted with the urine, and has by experiment ascertained that sugar may thus be made artificially to appear in the urine. Thus far our information on this interesting subject had reached, when a new element was infused into the inquiry by the researches of M. Dechambre.

It occurred to this pathologist, that if M. Reynoso's theory be correct, sugar ought to be found in the urine of aged persons, as in them the respiratory functions are notably diminished in activity; he accordingly undertook some investigations, the result of which has been to induce him to announce, *that sugar is an habitual ingredient in the urine of the aged.*—*Provincial Med. Journal, May 26, 1852, p. 278.*

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS.

60.—ON DISEASES OF THE JOINTS.

By Samuel Solly, Esq., F. R. S., Surgeon to St. Thomas's Hospital, &c.

[Mr. Solly remarks that disease of the hip-joint is for the most part a strumous disease. In some rare cases it arises in the cancellous structure of the head of the thigh bone without having extended to the acetabulum at all, and in such cases excision of the head of the femur might be performed with advantage, but it is exceedingly difficult to distinguish between the cases where the acetabulum is, and where it is not implicated. The following is Mr. Solly's description of the disease as attacking the child:]

Generally speaking, the child is first observed to limp in his walk, and on being questioned by his parents, complains of pain in the hip, or not unfrequently on the inner side of the thigh, near the origin of the adductor longus muscle. The pain is not usually severe, and consequently is too often neglected by parents until the disease has considerably advanced, as we have seen in the case which is our text for these observations.

If the patient is brought to you in this stage, you find that pressure over the joint in front will be attended with pain, for the synovial membrane is less covered in this situation than behind, and it is therefore more susceptible to the touch. Extension of the limb on the pelvis, and swinging it in the air while the weight of the body is sustained by the opposite limb, is also extremely distressing to the patient.

In the early and acute stages of the disease, when the joint is distended with an increased quantity of synovia, the buttock appears fuller than the opposite side; and this same fulness may be observed on the front of the joint in the groin. Still it must be allowed, that though it is not difficult to diagnose acute inflammation of this joint, yet it is difficult to state accurately the extent to which that inflammation has run. The hip-joint is so much covered in by muscles, that we cannot detect all the changes which go on in it, as we can more or less perfectly in the knee-joint, which from its exposed position can be much more easily examined. In the case of the knee-joint, we can compare the shape, form, and appearance of the sound joint so much more accurately with the diseased than we can in the hip-joint.

It has been said, that in the early stages of hip-disease the limb is lengthened. But here again the change is more apparent than real.

I believe that a very slight degree of elongation does take place, and from the following causes; but the very enumeration of the causes will convince you that this change must be almost inappreciable.

1st.—Relaxation of the muscles, allowing the bone to drop from its socket.

2ndly.—Effusion into the joint, distension of the capsule, and protrusion of the bone.

3rdly.—Thickening from inflammatory deposit of the adipose substance which occupies the centre of the cotyloid cavity.

In a practical point of view, I consider this lengthening, though, as I have already said, it is more apparent than real, important as diagnostic of the acute and active stage of the disease.

It is only in this stage that I have found any local depletion of service, for, as a general rule, and certainly in the more advanced stages, leeches, and other means of local blood-letting, only do harm, by weakening the powers of the pa-

tient. It is in this stage that absolute rest is so important, and that calomel and opium are of real use.

Pressure of one articulating surface against the other does not much affect the patient, unless there is ulceration of the cartilages; and therefore this manœuvre is often a means of diagnosing this additional mischief. The mere pushing the os femoris directly into the acetabulum will not always give rise to pain, even if there is ulceration; but by giving the thigh a rotation inward, thus jerking the bone against the inner side of the cotyloid cup, you can generally detect any increase of disease beyond mere synovitis.

After the disease has existed for some time, the rotundity of the buttock is lost, and the edge of the glutæus muscle no longer stands out in bold relief, the fissure separating the nates from the thigh almost disappears, and the line becomes more oblique. These changes all depend on the wasting of the muscles from disuse, consequent on the state of the joint admitting of but little motion.

The patient often complains of pain of the knee, referring it to the inner side. This pain has usually been considered sympathetic, and I believe that it generally is so, but M. Bonnet, to whose work I shall again have occasion to refer, considers that the pain arises "from actual disease in that joint." He is not able to prove this opinion by numerous facts, for he says, "I have neglected, as preceding authors have done, to open the knee joint" in those cases in which he has dissected the hip-joint; but on one occasion when the hip had suffered from chronic disease, he found synovial disease in the knee, with absorption of the cartilages. He attributes this secondary affection of the knee-joint to the compression and distension which the knee-joint suffers from the false position in which it is placed by the fixed flexion and inversion of the thigh.

In the case of E. C., there was unequivocal shortening of the limb, so much so, that she required a sole to her shoe of at least four inches, to enable her to walk at all evenly. Now, whence this shortening? If we look at the head of the bone, we find its convexity diminished, but that is all. If we look to the neck, we find it very nearly the ordinary length in a female of her stature. No absorption of its exterior has taken place; the obliquity, also, is normal. It has not assumed the horizontal line which shortens the limb in old age. The explanation is simple, and rests upon a very important law in the economy—namely, that the development of every part of the living organism which is not normally employed during growth, is more or less arrested; and I feel no hesitation in saying that if the diseased thigh-bone had been compared with its fellow on the opposite side, a considerable difference would have been discovered in the length, size, and height of the two bones.

In some cases of this disease, as you may see in one of my patients now in the hospital, the os femoris is actually dislocated, and the head of the bone lies on the dorsum of the ilium. In such cases there is no doubt regarding the shortening; but there are cases in which there is apparent dislocation, and the signs of which have been so distinct in the opinion of the attending surgeons, that they have felt no doubt on the subject, but in whom a post-mortem examination has proved that there was no displacement whatever.

But these observations must not lead you to suppose that, in all cases of disease of the hip-joint, the shortening of the limb can be thus accounted for, or that there is a positive shortening of the limb in all cases of this disease.

We have already seen that one of the characteristics of morbus coxæ is, that the thigh is flexed upon the pelvis, so that the toe can only just reach the ground: and so far the limb is shortened. It is a point of some importance, and it is one on which much has been written, to ascertain whether the limb is really, or only apparently shortened; and there are other cases in which the head and neck of the bone are removed under the action of carious absorption. Here, again, there can be no doubt the shortening is real. But in the greater number of cases the shortening is only apparent, not real. It arises from the alteration in the position of the pelvis from lateral curvature of the lumbar vertebræ; and if this curvature has not existed so long as to have become permanent, the error may be detected by placing the pelvis of the patient, when in bed, at its proper right angle to the spine, and then, if the diseased joint will permit the extension of the thigh, placing the limbs parallel. If it cannot be accomplished in this way, accu-

rate measurement from the anterior superior spinous process of the ilium to the patella, and thence to the sole of the foot under the ancle, will generally decide the question.

I regard the case of E. C. as one of strumous disease of the head of the thigh bone. If this view is correct, I think we may derive some encouragement in our endeavours to arrest this sad affliction in the cases that come under our care. The disease appears to have been excited in the first instance by an accident; but she was not laid up or prevented following her employment at the washing-tub or elsewhere, as would have been the case if the accident had been attended by acute inflammation of the synovial membrane and ligaments, or its consecutive ulceration of the cartilages. It has been proved by Sir B. Brodie and others that this strumous affection goes on insidiously, accompanied by little pain. The disease, I conclude, extended slowly from the bone to the cartilage. The cartilages were slowly ulcerated; matter formed in the joint, and found its way out by several openings. In this stage of the disease she first came under my care, in 1841. I believe that the measures then adopted arrested the ulcerative process, and the suppurative action with its debilitating consequences. A conservative action was set up, fibrine thrown out, and that firm fibrous membrane organised which you see uniting the head of the femur to the acetabulum, and filling up the joint. But, unfortunately for the poor girl, a portion of the neck of the femur had died, was necrosed, and the dead portion, or sequestrum, which you see occupying the interior of the neck of the bone, remained, to the day of her death, a source of irritation and purulent discharge.

It behoves us, therefore, to inquire how this happened. My own view of the course of proceeding is, that the supply of blood was cut off from this circumscribed portion of the femur by the destruction of the ligamentum teres, and the artery which runs down the centre of it. The existence of this vessel has long been known to anatomists, and its importance in regard to the nourishment of this portion of the bone was well insisted on by Sir Astley Cooper in reference to the repair of fractures of the neck of the thigh bone within the capsule. But this may not alone have been sufficient; and we may then adopt Mr. Lloyd's suggestion. This author states, and Sir B. Brodie agrees in this view, "that in the last stage of this disease the bones not only lose the preturnatural vascularity which they possessed at an early period, but even become less vascular than healthy bone."

But whatever be the explanation of the fact, the fact itself is a most important one, that a sequestrum may remain for years in the neck of the femur, discharging matter to the destruction of the patient, though the original disease of the joint which produced the sequestrum has been arrested, and the disease of the *joint* itself entirely cured. I do not know of any other case on record exactly similar. I have related it at the Pathological Society, and there were many surgeons of eminence present; none had seen its parallel.

Its importance can scarcely be over-estimated in a practical point of view. For though, in the first place, her general health during the later period of life seemed to preclude the possibility of operating without a fatal issue, and in the second place, the revelation, after death, of extensive visceral disease, showed that the operation must have been in vain, even if she had recovered from the immediate effects of it,—there are other cases in which the patient's health is good, with the exception of that depression which must accompany profuse suppuration, and in whom an operation would be warranted, and very probably lead to a complete recovery. Caries, limited to a small portion of the neck or trochanter of the femur, sometimes occurs, which might as well be removed, and with the same prospect of success, as the sequestrum we have just been considering. Mr. Knox, in some 'Observations on Excision of the Pelvic Extremity of the Femur,' has referred to several cases of this kind: two occurred in his own practice. In one which occurred in 1816, the disease had existed three years, but the operation of excision of the head of the femur had then never been proposed; and though Mr. Knox, feeling convinced that the joint was not implicated, was desirous of cutting down on the caries, his colleagues gave him no encouragement. The operation was unperformed, and the patient died exhausted. On dissection it appeared that the caries was limited to the outer surface of the trochanter major, and might easily have been removed by a file or by the head of a trephine.

The second case occurred in 1825 or 1826. The patient was a farmer in Roxburgh, and the case was so clear to Mr. Knox that he proposed operating; but as he was much out of health at the time, he intended recruiting his health by sea air, &c., first. However, in the mean time, he fell into the hands of another surgeon, who, not having the same prudence, operated at once, and the patient sank. On dissection it was proved the disease was confined to the trochanter major, the joint being perfectly sound.

Sir Benjamin Brodie has related the following very interesting case, in the last edition of his work, on 'Diseases of the Joints':—

"W. Kendrow was admitted into St. George's Hospital on the 4th of February, 1837. The knee-joint was slightly enlarged. There was a sinus in the anterior part of the head of the tibia, a little below the joint, through which a probe could be passed into the centre of the epiphysis, where it came in contact with a portion of dead bone, apparently loose in the cavity in which it was contained. The motions of the knee were unimpaired.

"From the history which the patient gave, it appeared that about a year ago he had suffered from a severe attack of inflammation of the head of the tibia, and at some time afterwards an abscess burst in the front of the leg, leaving the sinus which has been just mentioned

"There had been two or three attacks of inflammation in the interval which had elapsed between the first attack and the time of the patient coming to the hospital.

"March 2nd. Having exposed the head of the tibia, I applied a trephine so as to enlarge the sinus which led to the interior of the bone. At the bottom of this sinus lay a detached piece of dead bone of the size of a horse-bean, but of a very irregular shape; this was extracted without difficulty.

"A few days after the operation, the patient had an attack of rigor and vomiting, which was followed by an attack of erysipelas, of which he ultimately died.

"On examining the limb it was found that the whole of the upper extremity of the tibia was increased in size and density, there being a deposit of rough scabrous bone on many parts of its external surface.

"The cavity from which the dead bone had been extracted was of sufficient size to contain a large cherry, presenting a tolerably regular concave surface, but without any consolidation of the cancellous structure. This cavity communicated with the knee-joint in front of the spine of the tibia, by a narrow aperture. The cartilage covering the head of the tibia was in many parts completely absorbed, leaving the surface of the bone exposed, but not in a state of caries. In other parts the cartilage was converted into a substance bearing some resemblance to condensed cellular membrane, and in a few places a narrow strip of cartilage remained, not altered from its natural condition. In some parts the bone, where it was apparently exposed, was found, on close examination, to be covered by a very thin semi-transparent membrane. There was no pus in the joint. Although the head of the tibia was hard and dense, the condyles of the femur seemed to contain less earthy matter than under ordinary circumstances. The cartilage covering them was easily peeled off, and some portions of it were so thin that the colour of the bone could be seen through them.

"There is no evident reason why, if he had not been unfortunately cut off by the attack of erysipelas, this patient should not have recovered, retaining an useful joint.

Only a few days ago, in company with Mr. Fillitter, a surgeon in the Hackney-road, I saw a case in many respects similar to the one we have lately watched in the hospital. The subject of it is a gentleman of stout build, moderate height, and dark complexion; habits uniformly temperate. When a child of about six years of age, he was attacked with pain in the left hip-joint, and subsequently lameness. Twelve months afterwards, an abscess formed, giving rise to much constitutional disturbance, which reduced him greatly. He was seen at this time by Mr. Green, of St. Thomas's Hospital, who stated that he was labouring under disease of the hip-joint. After confinement for about a year and a half, during fifteen months of which the abscess continued to discharge, and a second, apparently superficial, formed over the buttock, he regained health and strength; the affected limb was shortened, and the shortening increased after he got about. A small opening remained over the fore part of the limb for four or five years,

yielding a very slight discharge. This wound re-opened three times up to the age of nineteen years, since which time up to the present attack, he has had merely occasional stiffness, with pain, lasting for a few days. For four years previous to the present attack, he believed himself to have been entirely free from any local symptom whatever, and has frequently walked twelve or fourteen miles without fatigue.

In March, 1851, whilst in good health, he became troubled with pain, somewhat of a rheumatic character, in the outer part of this hip-joint, causing an apparent weakness in the limb. This was preceded by occasional stiffness, and followed by an abscess which opened below the trochanter. Six weeks after its first appearance, it was attended with a good deal of suffering at night. In May, a second opening formed, and he again consulted Mr. Green, who recommended rest, and sarsaparilla internally, and gave it as his opinion that the head of the femur was diseased, but the acetabulum not so. The discharge from these openings was flocculent, with thin purulent fluid, and the formation of the abscesses was attended with a good deal of destruction of substance. A third and very large abscess formed shortly afterwards at the outer side of the joint, from which he suffered great pain, relieved only by lying on the sound side, with the affected limb resting on the other, thereby removing pressure from the joint. Towards the latter end of July he recovered sufficiently to leave town, and remained in the country upwards of two months. On his return, he regained his usual health, and resumed his occupation. The limb, however, continued weak, and the openings remained. Early in November, in consequence, he imagines, of a little over-exertion, or the use of iodine injections, which he had tried for some weeks (strength of half a grain to one ounce of water), a fresh abscess formed, with symptoms similar to the last, in the neighbourhood of the joint, and compelled him again to lie by; and shortly after, a superficial collection of matter, apparently a suppurating gland, made its appearance at the inner side of the thigh. After these had discharged their contents, he became free from pain, and has continued so up to the present time (January, 1851). Minute fragments of bone have escaped with the discharge from the openings on the outer side of the joint.

Present state.—General health good; pulse ranging from 85 to 100; tongue clean; taste somewhat impaired, but appetite and digestion good; walks easily for a short distance, and climbs stairs readily; much exertion produces dull pain in the joint. There are on the fore part of the limb the depressed adherent cicatrices of old abscesses, and on the fore and outer parts four papillary openings of sinuses, three of which I ascertained to lead to bone, carious, certainly, but I could not detect a detached sequestrum; the discharge from these is flaky and thin. On the inner side are two openings of a superficial sinus. The limb is shortened to the extent perhaps of two inches and a half; is smaller in circumference than the right. The foot is everted, the trochanter approximated to the spine of the ilium; and on flexing the thigh on the trunk, which he can do almost to the full extent, the whole pelvis is most distinctly seen to move with it, rotating on the opposite femur, the joints of the lumbar vertebræ yielding considerably at the same time; so that the thigh-bone on the diseased side moves *with* the pelvis, but not in the least *on* the pelvis. I believe that in this case there is a sequestrum in the neck of the thigh-bone, and I therefore believe that an operation is justifiable.

I heard of a case, a few days ago, in which the head of the femur was excised; and after the operation had been performed, it was discovered that the head of the bone was sound, with the exception of a sequestrum in its centre, which might have been removed without the excision of the head.

You will learn from these cases, that one of the results of disease of the hip, knee, and other joints, may be the production of a sequestrum in the head of the bone entering into the composition of the joint; and you will see how important it is to ascertain, by a most careful and searching examination, the presence of such sequestrum, with a view to its removal by operation.

I cannot conclude these observations without adverting to the existence of long-standing disease of the liver in this case. The frequent concomitance of disease of the liver with disease of the hip, has been pointed out by Mr. Coulson, who states that, at the Margate Infirmary, leeches and other measures are oftener applied to this organ than to the affected joint. I am unprepared to account for this alliance.

I know not whether it should be considered cause or effect; but I am disposed to believe that they both arise from the same strumous diathesis.—*Lancet, May* 29, 1852, *p.* 510.

61.—ON SCROFULOUS AND RHEUMATIC INFLAMMATION OF JOINTS.

By Edward Stanley, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

[Mr. Stanley remarks upon the difference in the frequency with which certain joints are attacked by disease, and how exempt others seem to be from the like affections. An example of the former fact may be taken in the hip and knee-joints, and of the latter in the lower jaw, the sterno-clavicular articulation, or the heads of the ribs with the vertebræ. Some explain this by their greater or less exposure to external influences; but this cannot be the case, else why should the hip be more frequently attacked than the ankle joint? Others say that joints are more susceptible from the activity of their functions; but few joints are more exercised than the lower jaw, and yet few are more free from disease. After a few observations on some cases of anchylosis of the lower jaw he proceeds:]

I now come to the consideration of strumous inflammation of joints, and before proceeding to investigate its phenomena, the following questions demand attention:—1st. What are the circumstances which would lead us to regard the disease as strumous, when brought to the bedside of a patient? 2nd. In what condition should we expect to find the structures, viz., the bones, cartilages, and synovial membranes of a joint, provided the disease be strumous? With reference to the first question, I am unacquainted with any local symptom, any precise condition in the affected joint itself, which would enable us at once to decide on its strumous nature. We must look elsewhere. The age and aspect of the patient, the past or present existence of scrofulous disease in other parts, such as enlargement and suppuration of the cervical absorbent glands, strumous ophthalmia, tubercle in the lungs and other organs,—any of these, especially if actually co-existent, would justify us in regarding the disease as scrofulous. Often, indeed, these cases are obscure, and sometimes we are led to a wrong conclusion. The aspect of the patient is delusive, and should not be too much relied upon. Many instances occur in which the patient's appearance seems indicative of the existence of scrofula, whose subsequent progress and favourable recovery prove that such evidence is fallacious.

We have now to answer the second question. What is the state of a joint invaded by strumous disease? The morbid specimen I now exhibit shows the condition of the articular extremity of a bone in an extreme attack of this nature. The end of the bone is softened from absorption of its earthy matter, and its cancelli are filled with tuberculous deposit. It is, however, according to my experience, rare to meet with so complete an example of strumous disease as this specimen furnishes. In the majority of cases, I believe that no tubercular matter is found deposited, and when found, it is only in the last stages of the affection. Such a condition of bone, when it does exist, is, in my opinion, irreparable; and, when the surgeon is summoned to a case exemplifying the disease in this its latest stage, he can do nothing to restore the bone to its natural state, nothing to accomplish a cure. There is, however, an earlier stage in these affections, which you will often have to treat in private, although it is seldom seen in hospital practice—a stage amenable to treatment, a stage in which, generally speaking, the morbid impairment of the bone may be arrested, and its integrity restored. It is characterized by increased heat, and enlargement of the bone, immediately above the joint. There is, indeed, increased vascularity, and low inflammation of the bone, which is quickly followed by expansion of the cancellous texture, and absorption of earthy matter. Ultimately in bone thus degenerated, tubercle is sometimes deposited. Such, then, is the state of the bone in a joint affected with struma. The other structures,—the cartilages, synovial membrane, &c., are in a state of low inflammation, inflammation which has commenced either in the bone or the synovial membrane itself, and which, if suffered to advance, is followed by its usual consequences,—exudation, thickening of tissues, and sometimes suppuration. Now the appropriate treatment for an attack of this sort is, perfect rest for the limb, and removal of all weight and pres-

sure from the inflamed joint, so as to insure, as far as possible, its complete tranquillity. If inflammation exists in any activity, the judicious application of leeches will be beneficial; but it should be borne in mind that leeches must not be lavishly employed, as strumous patients cannot stand depletion. The remainder of the treatment is constitutional, and should be directed to the restoration of the general health, if that has failed; to its maintenance if it has not. To this end country air, or, where it is practicable, a resort to the sea-side should be recommended; a light, nutritious diet enjoined, and the state of the stomach and bowels be carefully attended to. The following particulars of a case which occurred to me some years ago, illustrates forcibly the truth of my observation, that the articular ends of bones rarely become the seats of tubercular deposition, even in well-marked examples of strumous disease.

A boy, ten years old, was under my care for scrofulous enlargement and suppuration of the cervical glands. While in the hospital, hip disease supervened, evidently of strumous character, which ultimately wore out the patient. Examination of the body showed that the joint was disorganised; the soft tissues around were infiltrated with tubercular deposit; the capsule and articular cartilages partially destroyed by ulceration; the bone was dislocated on the dorsum ilii; the acetabulum widened, and containing tubercular matter. The mesenteric and other absorbent glands were infiltrated with tubercle. Tubercular ulceration was present in the intestinal canal. However, when a longitudinal section of the head of the femur had been made, no tubercular deposit was found in the interior of the bone. Absorption of earthy matter, and widening of the cancelli, had taken place, but no interstitial tubercle existed.

Not infrequently disease in the soft tissues around a joint, inflammation, and abscess, are mistaken for disease inside the joint; and, in some instances, eminent surgeons have amputated limbs under the impression that an irremediable articular affection existed, while, in reality, the exterior tissues alone were involved, the joint itself being sound.

Joints are liable to another form of inflammation, differing from that we have just reviewed,—"rheumatic inflammation." Examples of this disease occur generally in combination with rheumatic fever, and are, therefore, more prevalent in the medical than in the surgical wards of the hospital. The diagnosis of articular rheumatism is not usually difficult. When rheumatic fever is present, it is, of course, obvious; but when it is not, the implication of other joints, the cause and symptoms of the attack, and the history of prior rheumatism, will generally guide us to a right decision: the implication of other joints, because it is extremely rare to find rheumatism affecting one joint only; it attacks two or three simultaneously, or flies about from one to another: the cause and symptoms of the attack,—because we shall almost invariably find that the patient has been exposed to cold, or dampness, and because muscular pains are generally precursory to the articular inflammation. Rheumatic disease thus induced, is commonly marked by pain in one particular spot; the patient does not complain of general pain in the joint, but points to one especial locality, and describes it as the seat of all his sufferings.

Articular rheumatism is, moreover, intractable, leaving one joint and assailing another, or departing and recurring in the same joint. Joints are attacked by rheumatic inflammation in two ways; either their fibrous structures, their ligaments, suffer, or their synovial membranes. Now, the consequences of rheumatic inflammation of the ligaments may be serious, such, indeed, as may terminate in dislocation of the bones of a joint. For, under its influence, the ligaments become soft and elongated, so as to permit the bone to slip out of the cavity in which it is naturally fixed. In this way the head of the femur may be displaced upwards on the dorsum ilii without rupture or ulceration of either the capsula or the ligamentum teres. An example of such an occurrence happened some years ago in the practice of Mr. Lloyd.

A painter, in the enjoyment of good average health, was in the habit each morning of taking a warm bath. After having done so on one occasion, he experienced a pain in the hip-joint; one of the joints of the fingers also became swollen and inflamed. He consulted a medical man, who gave him hopes of speedy recovery. Nevertheless, he remained in bed five weeks, after which, the

pain having subsided, he was told to get up: this he found himself totally unable to do, and, on examination, the limb was found to be shortened and inverted, the head of the bone having been dislocated on the dorsum ilii.

A case has also been related to me by Dr. Latham, in which articular rheumatism of long continuance produced dislocation. Some years ago, a young woman was in the hospital, under the care of Mr. Lawrence, suffering from rheumatism in the hip and wrist joints. She was confined for some time to her bed, and when permitted at length to get up found that she was lame, and that the lameness grew gradually worse. After a while she experienced a sensation as if the bone slipped from the socket when she walked. On examination, the limb was found of natural length, and its movements complete; rotation, however, was remarkably free; and when the thigh had been flexed on the pelvis, and was then rotated, the head of the bone could be evidently felt to pass over the brim of the acetabulum.

Cases like these illustrate the unusual results of a very common affection, which, although often obstinate and tenacious of existence, generally terminates well, leaving an unimpaired joint behind.

Rheumatic synovitis commonly ends in effusion. Ulceration of the articular cartilages may, however, supervene; and I have witnessed a case in which this condition was set up within nine weeks from the commencement of the attack, so that it was found necessary to amputate the limb. More usually, however, rheumatic synovitis gives rise to anchylosis, such anchylosis as may result from the adhesion of opposite synovial surfaces by effusion of fibrin, and which, as I have explained in an early part of the lecture, is called spurious, in contradistinction to true or osseous anchylosis.

Gonorrhœal rheumatism is a form of the disease occurring in conjunction with gonorrhœa, brought on by exposure to the vicissitudes of weather, and to the development of which, a certain unhealthy constitutional state appears necessary. Unlike ordinary rheumatism, it confines itself to one or two joints, and unshifting, clings to them with remarkable tenacity. It is, in truth, an affection that has long baffled the powers of medical surgery. In many instances the patients appear to recover, but the complaint returns on the slightest exposure, and no permanent cure is effected. There is now under my care, in Lazarus, a Pole suffering from gonorrhœal rheumatism of the wrist joint. In him the disease has yielded for the present to three grain doses of the iodide of potassium, given three times daily; and I am informed that the gonorrhœal discharge, which had become scanty, has reappeared since the mitigation of the articular disease. The best possible termination in these cases,—a termination which has ensued in the instance I have mentioned, is serous effusion into the joint; for when the fluid is absorbed, it is not unlikely a useful joint may remain. Some time back, a young man, aged twenty-one, was my patient in the hospital, in consequence of a most acute attack of rheumatism in the shoulder-joint, following gonorrhœa. Though he was in a reduced state, I ordered him to be bled from the arm; mercury was adminstered; in fact, very active treatment was adopted. Serous effusion in the joint resulted, and within five weeks I had the gratification of seeing him leave the hospital with the functions of the joint in a great measure restored.

We occasionally meet with examples of rheumatic synovitis occurring after parturition, which may originate anchylosis. The affection differs in no shape from ordinary rheumatic synovitis; but it requires gentle treatment, as the patients attacked by it are generally much debilitated, and frequently suffering from some uterine complication.—*Med. Times and Gazette, June* 12, 1852, *p.* 583.

62.—TREATMENT OF BURSAL TUMOURS.

Under the care of E. Stanley, Esq., and E. A. Lloyd, Esq., at St. Bartholomew's Hospital.

[There is no bursal tumour perhaps more difficult to get rid of than that sometimes presenting itself in front of the wrist joint,—from the friction constantly produced by every movement, preventing benefit being derived from absorbing applications—from the liability of its inducing irritation or inflammation in the surround-

ing parts,—and, lastly, from its frequently containing the little melon seed-like bodies which are continually liable to reproduce the inflammatory action.]

Some years ago, Mr. Syme, alleging that the destructive nature of the inflammation set up in the attempts at cure by setons, injections, or small incisions, was due to the manner in which the part was bound tightly down by the annular ligament, introduced the practice of dividing the latter, and laying the whole swelling freely open. At the time of publication of his paper on the subject, five cases had been thus treated and with very satisfactory results. The propriety of making free incisions is undoubted; for, even should none of the loose little masses above mentioned chance to be present requiring removal, still they are absolutely necessary to prevent the very injurious degree of tension which would otherwise be produced by the inflammation of a structure so firmly bound down, and to allow of the free escape of the discharge. Still, however, the division of the annular ligament being a severe procedure, is one which English surgeons are unwilling needlessly to adopt, and that it is not always necessary is proved by the following interesting case, which occurred lately under the care of Mr. Stanley:—

Julia C., a healthy young woman, aged 17, had been troubled for seven years with a large ganglionic swelling in front of the right wrist, which had latterly much increased, and completely disabled her from grasping either knife or pen. The tumour in the palm had attained the size of an egg; it was freely fluctuating, and communicated with a smaller one below the palmar ligament, and immediately in front of the wrist joint. It had been subjected to persevering treatment, in hopes of procuring the absorption of the fluid, and with only very slight success, for as soon as the counter-irritant was omitted, it relapsed to its old state. Among the means which had been used, were constant pressure, blisters frequently applied, and kept open with sabine cerate, a strong solution of iodine repeatedly painted over the part at short intervals. It appeared useless, therefore, to expect any further benefit from remedies of this class, and Mr. Stanley at once determined to attempt a radical method of cure. A free incision was accordingly made into each division of the swelling, the intervening annular ligament being thus left uninjured, while the freest possible means of escape was provided for the discharge. A considerable quantity of thick, glairy fluid was evacuated, but no solid bodies. Some large tents of lint were introduced into each wound, and the whole hand placed in a poultice.

During the first week, there was a considerable degree of constitutional disturbance, and much local swelling, but these symptoms gradually subsided as a free process of suppuration became established, and no burrowing of matter, or extension of inflammation to the surrounding parts took place. Five weeks after the operation, the wounds were nearly closed, and passive motion was resorted to. In a fortnight more, when she left the hospital, the wounds had quite healed, all swelling was removed, and she was able to very nearly close the hand. When seen a few weeks afterwards, she was able easily to grasp objects, and could use the hand for most ordinary purposes. All trace of the tumour was perfectly, and, in all probability, permanently obliterated.

Among the very various modes of treatment which have been resorted to for the cure of the common enlarged bursa patellæ, perhaps the practice of first drawing off with a small trocar as much of the contained fluid as possible, then applying either a blister or a strong solution of iodine, and ultimately supporting the part with a mercurial plaster and bandage, is the most successful. It is frequently very speedy, often permanent, and always safe. It has also the additional recommendation of not necessitating any confinement to bed. The conversion of these tumours into acute abscesses by the introduction of setons, although recently so much praised, is a practice not seldom productive of disagreeable consequences. Its great advantage, of course, is, that the bursa having suppurated and become obliterated, there is no chance of its ever refilling; but even this, we should imagine, may often be to a great extent counterbalanced by the fact, that the patient is ever after obliged to kneel on a cicatrix.

It would appear that cases in which the tumour has recently formed are peculiarly ill-adapted for this mode of treatment.

A stout, plethoric lighterman, aged 28, was admitted into St. Bartholomew's Hospital six months ago on account of a tumour, the size of an egg, in front of

his right patella, which had formed in the previous week. It was quite painless, and apparently free from inflammation. A seton was introduced, consisting of a single thread, and, although he was kept perfectly quiet in bed, yet it occasioned such intense pain, accompanied with rigors, &c., that it had to be withdrawn in twelve hours. For several days the pyrexial disturbance was most severe, attended with great swelling of the parts about the knee. The abscess which formed was freely opened, and he ultimately did well.

There is at present, under the care of Mr. Lloyd, an old man, by trade a carpenter, in whom, while in perfect health, the bursa in front of the left patella suddenly became much enlarged. It was unattended by pain, but, as it interfered with his occupation, by preventing him from kneeling, he at once applied for surgical advice. The gentleman whom he consulted passed through the tumour a single thin ligature thread, and allowed him to walk home. The inflammatory process commenced almost immediately, and the rest of the day and the following night were passed in what he described as most intense suffering. On the next morning he applied for admission at the hospital; the seton was at once withdrawn, and the large abscess which it had occasioned laid freely open. During the following week, he progressed satisfactorily, when all at once another attack of inflammation took place, the thigh and leg became much swollen, and a large collection of matter formed around the whole front aspect of the joint, which was attended with great local pain and very serious constitutional disturbance. This second abscess has also been opened, the swelling is now much subsided, and he appears likely to recover favourably, after having, however, for some days, been placed in a really critical position.

These cases are not the only ones in which we have observed undesirable effects follow the employment of setons; but they are sufficient to make it obvious that the remedy is not adapted for indiscriminate use. Probably, the cases for which it is most suitable are those where the enlargement is very chronic and has resisted the ordinary measures.

Adventitious bursæ, when exposed to continued irritation, sometimes become converted, by chronic inflammation, into almost solid tumours. We have noticed lately, in the wards of St. Bartholomew's Hospital, several examples of this condition. In one the tumour was seated on the shoulder of a young man who was in the habit of carrying a basket on that part. It was of considerable thickness, about three inches across, and almost round. To the finger it felt firmish, and almost solid, and communicated little, if any, sense of fluctuation. A transverse incision was made across it, and a small cavity was found in its centre containing fluid, while its walls, which were three quarters of an inch in thickness, were composed of layers of false membrane, of a reddish colour. In a second case, the disease was seated over the external malleolus of a tailor's apprentice, and was evidently owing to the pressure exercised on that part when seated cross-legged. The patient stated that the affection was one from which tyros in the trade very frequently suffered. It was treated in the same manner as the preceding case, and its section exhibited precisely similar characters. Both of them healed kindly, after free suppuration, but the removal of the surrounding thickening was a very slow process.

In all varieties of enlarged bursa in which the knife is resorted to, it is important to remember, that the incision can scarcely be too free. A small puncture usually serves to excite acute inflammation of the cavitity, which is much aggravated by the tension to which the part when swollen is subjected. By an incision extending completely across the swelling, all this is prevented, and a mild process of suppuration, entirely free from constitutional disturbance, is usually all that follows.—*Med. Times and Gazette, Sept.* 11, 1852, *p.* 262.

63.—*Case of Enlarged Superficial Bursa and Ganglion.* By Henry Smith, Esq., Surgeon to the Westminster General Dispensary.—[The usual method of treating diseased superficial bursæ is both uncertain and inconvenient, and from their situation, it is highly important they should be radically cured so as to bear the pressure to which the parts under which they are placed are subjected. The

ordinary treatment of diseased bursæ, whether by counter-irritants or excision, and that of ganglion by pressure, rupture, excision, &c., cannot but be attended with considerable risk. Mr. Smith says:]

The object intended, then, is to produce inflammation and suppuration, so as to obliterate the cavity, or at least so alter the structure of its interior as to prevent it from further secreting the peculiar fluid which mainly constitutes the disease. The mode I adopt is this. I make a free incision into the bursal tumour, to let out its contents; then, taking a camel's hair pencil, it is dipped into a strong solution of iodine, and applied to the interior of the sac. A small strip of lint is then inserted into the wound, and kept there; inflammation and suppuration ensue; the consequence is, obliteration of the cavity, or at least an altered condition of its secreting surface is produced, and the disease is permanently and radically cured. In some instances, if care is not taken, and if the patient's system be out of order, the inflammation may be excessive, and produce great inconvenience; but this is to be guarded against by telling him or her to keep the limb quite quiet for a day or two, to apply constantly a warm poultice, and to keep the bowels well open by saline medicines. This treatment is not to be adopted in all cases, but merely in those chronic enlargements which have existed for months or years, and in which other remedial measures have been tried; and, in those cases where the walls of the bursa have become so thickened as to constitute a solid mass, excision, doubtless, is the sole measure.

In ganglion the following method of treatment, producing the same results, is now usually adopted by me. This consists in threading a small needle with a single thread of silk, passing it through the tumour, and leaving it there for a few days, until suppuration is effected. This process is permitted to go on for a day or two, and at the end of that time a cure will be found to take place. In one case of a young lady, this method brought about a perfect cure after she had long been under the care of two surgeons, one of whom had punctured the tumour sub-cutaneously twice, and the other had punctured or burst it, and used pressure for several months, all without the least benefit. The same precautions are necessary here as with the enlarged bursa; too much inflammation may be excited; consequently, it is necessary to tell the patient not to use her hand, but to keep it in a sling, and, when suppuration occurs, apply a poultice. In one case of mine a young lady practised violently on the piano after the operation, and inflammation of the hand and fore-arm took place, which considerably protracted the cure. In some instances, however, it will be found necessary to tell the patient to exercise the hand, as sufficient inflammation may not be produced.—*Med. Times and Gazette, July* 10, 1852, *p.* 34.

64.—ON A NEW MODE OF REDUCING DISLOCATION OF THE THUMB BACKWARDS.

By M. Demarquay.

In spite of the numerous investigations that have been made into this subject, the procedures for the reduction of the dislocation of the thumb, recommended even by high authorities, not unfrequently fail on trial. M. Demarquay having recently met with a case in which these difficulties were overcome by a very simple manœuvre on the part of M. Roux, he presents in this paper an account of the investigations which this led him to undertake.

A lady, æt. 30, while descending hastily from a carriage, fell upon the pavement with all the weight of her body resting on the extended right hand. A dislocation of the thumb backwards ensued, for which M. Demarquay was consulted about fifteen hours after the accident had occurred. The right thumb formed an obtuse angle with the corresponding metacarpus, the anterior extremity of which sensibly projected into the palm. All flexion and extension were impossible; the hand was swollen and violaceous, and the least touch caused great suffering. The patient having been brought into a state of anæsthesia, traction was made by Charrière's forceps, in the direction of the axis of the first metacarpal bone; and when the posterior portion of the phalanx was brought to the level of the metacarpal surface, flexion was employed. This procedure, tried again and again, however,

failed to accomplish reduction. After various other efforts had been made, M. Roux was called in, and he employed the same manœuvre as just stated; but prior to flexing the thumb, he imparted to it a *rotatory movement inwards*, and reduction was easily accomplished.

To obtain an explanation of this result, M. Demarquay repeatedly investigated the subject experimentally on the dead body. When a luxation of the thumb backwards is produced, the terminal extremity of the first metacarpal bone passes between the two bundles of the *flexor brevis pollicis*, a portion of the external border of which it often tears, and is to be felt just under the skin. It is now enclosed in a muscular "buttonhole" aperture, formed outwardly by the *adductor pollicis* and the external part of the *flexor brevis*, and inwardly by the inner portion of the *flexor brevis*, the transverse *adductor*, and the very strong tendon of the *flexor longus pollicis*. The anterior ligament always breaks near the metacarpus; so that in from fifteen to twenty experiments, it has never been once found interposed between the articular surfaces. In many of the experiments, both the lateral ligaments, and, in nearly all, the external, have been broken. The difficulty in reduction does not arise from the interposition of the anterior ligament between the articular surfaces, as supposed by some, or from the persistence of the lateral ligament, as conjectured by others, but from the surrounding of the metacarpus by the fleshy "buttonhole" already described. The remedy is not the incision of this, as recommended by some authors, but the extricating the head from its grasp by the procedure adopted by M. Roux. The head and forearm are to be placed between pronation and supination. The surgeon seizes the terminal portion of the phalanx of the thumb with the forceps held in his right hand, and exerts traction on the part, while with his left thumb and index finger he pushes the projecting metacarpus firmly backwards, taking care to prevent it from advancing during the subsequent flexion. When the extension has been for some time made in the direction of the axis of the thumb, a marked rotary movement inwards is to be effected, which will engage the metacarpus from the external band of muscles that surround it, and enable them to slide in front of its head. This done, the tractions are to be continued until the posterior part of the phalanx is brought to a level with the head of the metacarpus. Flexion of the thumb is then to be performed, at the same time that with the thumb of the left hand the displaced metacarpal bone is forced backwards.—*Medico-Chirurgical Review, Oct.*, 1852, *p.* 414.

65.—ON A NEW APPARATUS FOR THE REDUCTION OF DISLOCATIONS.

By Dr. Broxholm.

[At a meeting of the Medical Society of London, Dr. Broxholm exhibited an apparatus for the reduction of dislocations, and stated that]

Having found the ordinary pulleys insufficient to produce the required kind of extension in the reduction of dislocations, particularly those of long standing, he was induced to devise an apparatus by which that object might be attained. In the construction of an instrument to produce the requisite kind and amount of extension, it appeared to him that the power exerted by a screw was that which was most likely to effect the purpose; and with that idea he invented an apparatus, and had it made by Mr. Coxeter, which has in every respect realised his anticipations, and which quite supersedes the ordinary pulleys; even the patient could, if necessary, make the requisite extension himself. The object in employing the pulleys, as every one knows, is to make and keep up a sufficient amount of extension for a given time, that extension being well regulated and gradual. Manual exertion, unaided by instruments, is incomplete to produce such effects. Now, the pulleys in ordinary use exert their influence by a series or succession of jerks, which are likely not only to be productive of great injury, particularly to the soft parts, but also to occasion a great amount of unnecessary suffering to the patient, without so effectually wearying the muscular structure, —an object so desirable in the reduction of dislocations. The apparatus Dr. Broxholm has invented, possesses great power of making extension, which can

be well regulated, and made very gradually, and continued manual exertion is superseded by the ordinary power of the instrument itself. Very little force is required to produce an extraordinary power of extension, and which, as before stated, when once made, can be kept up without the slightest manual interference. The length of extension will be four times that of the ascension which the screw, when turned to the right, causes the moveable pieces to make; consequently a very small apparatus is sufficient for the fulfilment of the operation; in fact. the apparatus possesses the power of the ordinary pulleys in an increased degree, without their objections, as well as the nicely-regulated action of the screw of the tourniquet. The next object to be effected, when the requisite degree of extension has been produced, and the articulating extremity thereby brought within due limits of the situation from which it has been displaced, is to suddenly disengage the extending apparatus, when the *tactus eruditus* will complete the reduction. Dr. Broxholm has added an appendage to the extending apparatus to carry out the above intentions.

The apparatus was used successfully a week ago, when the ordinary pulleys had failed, in the reduction of a neglected dislocation of the humerus forwards, of between ten and eleven weeks' duration.—*Med. Times and Gazette, May* 29, 1852, *p.* 553.

66.—CASES OF UNUNITED FRACTURE.—UNION PROMOTED BY THE INTRODUCTION OF IVORY PEGS, ACCORDING TO DIEFFENBACH'S METHOD.

Case 1. At Guy's Hospital, under the care of John Hilton, Esq., F.R.S.
Case 2. At King's College Hospital, under W. Bowman, Esq., F.R.S.
Case 3. At King's College Hospital, under W. Fergusson, Esq., F.R.S.
Case 4. At City of Dublin Hospital, under Dr. Groghegan.

[In 'The Lancet' for 1851, Vol. II., page 344, there is recorded a case of the above nature, treated by Mr. Stanley with the ivory pegs, where bony union was promoted. The following case has recently been under the care of Mr. Hilton:—]

Case 1. George P., aged 65, a healthy-looking man, whilst going up stairs, missed his footing, and fell, by which his tibia and fibula were broken, about midway between their extremities. Only partial success followed attempts to reduce the broken bones, and after the case had been treated sixteen weeks with every care, no union was found to have taken place. The patient was then sent into the country, and after again being fourteen weeks in bed, no improvement was found to have taken place.]

On the 11th Dec., 1851, Mr. Hilton again admitted him, and finding the bones still ununited, resolved upon trying the various means which have been recommended for promoting union. Mr. Hilton began by introducing two steel needles between the fractured extremities of the bones to excite an inflammatory action. The needles were kept in their position for several days, and gave rise to very painful swelling and inflammation, from the wound down to the ankle. This procedure did not, however, lead to any consolidation.

On the 1st of February, 1852, seven weeks after the patient's third admission, Mr. Hilton determined on giving a trial to Dieffenbach's plan of exciting union in fractured bones; which, as is well known, consists in driving polished ivory pegs through the extremities of the fragments. This was accomplished in the following manner:—Mr. Hilton made two apertures with a lancet in the skin, over the upper or projecting portion of the fracture, side by side, and about three-quarters of an inch apart. A small gouge was then passed somewhat obliquely through both ends of the fractured bone and the intermediate soft structure; its passage through the outer shell and cancellated structure of the bone being distinctly recognised by their relative density. The two pegs, each an inch and a half long, were then passed into the holes made by the gouge and lancet, and driven home by the sharp blow of a hammer, so that the top or head of each peg was rather below the level of the surrounding skin.

A good deal of swelling and inflammation soon supervened about the seat of the operation. About four weeks from the introduction of the pegs, the patient,

after, as he states, making some little exertion to move himself in bed, lost about three or four ounces of venous blood by the side of one of the pegs. This peg Mr. Hilton endeavoured to remove with the forceps, but only succeeded in lifting it to about half an inch. The whole limb was now raised in bed, and cold lotions applied over the fracture. No more bleeding occurred, and in about a fortnight the peg came out spontaneously, or was pushed out by granulations growing in its track. Three weeks after, Mr. Hilton pulled out the second peg.

On examining the leg, there was no doubt that bony union was proceeding, but there was still some little yielding of the fracture, which was rendered evident on trying with some force to bend the bone at the seat of the fracture. The limb was then laid on a splint, and supported in position by side-splints, and a bandage so arranged as to leave the holes previously occupied by the pegs exposed. These apertures were covered by a bread poultice.

On June 7th, four months after the introduction of the pegs, the splints were taken off, and consolidation found nearly complete. The patient left the hospital on the following day, with a bandage and pasteboard upon the leg, and was desired to continue to move about with his crutches for a week or two, and then to use his leg gradually, and with care.

July 8th, 1852, five months after the operation, and one after leaving the hospital.—The patient can now walk with the aid of a stick; the bones are united, but the leg is weak, the muscles being much wasted from a protracted inaction of twenty-two months.

This is certainly a very favourable result; and this case, coupled with Mr. Stanley's (see above), will no doubt encourage surgeons to have recourse to the exciting action of the pegs in instances of the same kind.

[Every case, however, is not so successful, as is found by the following under MR. BOWMAN:—

Case 2. William L., aged 13 years, was admitted Dec. 16th, 1850. When three months old, he suffered a fracture of both bones of the right leg, and he was allowed to grow up to the age of thirteen, without any serious endeavour being made to remedy the defects. When admitted, the deformity was extreme; the extremities of the tibia and fibula being placed over the middle of the dorsum of the foot. The whole limb was also very diminutive, as compared to the sound side.]

On Jan. 11, 1851, the boy was brought into the operating theatre, Mr. Bowman having resolved to cut down upon the fragments, and bring the ends of the bones in apposition after removing a portion of their extremities, reserving to himself the faculty of amputating the limb if this could not be effected.

Mr. Bowman began by dividing the tendo-Achillis by a subcutaneous section; he then exposed the extremities of the tibia and fibula by separate longitudinal incisions, so as to avoid injuring the extensor tendons, dissecting close to the bones all the way, that no more bleeding than necessary should be occasioned, and for the purpose of saving the soft parts. Mr. Bowman then removed an inch and a half of the upper and an inch of the lower fragments, and brought the parts together, reducing the limb to a position as nearly straight as possible. Some superfluous integument remained, but it was thought that this would most probably be of use in the course of the development of the limb. The attempt to save the foot being so far satisfactory, Mr. Bowman abandoned the idea of amputation. During the latter part of the operation the boy was a little faint, but he soon rallied.

The case was treated as a compound fracture, the patient removed to bed, the limb placed in a pair of splints, and slung in a cradle. For the first four days the patient experienced a good deal of pain, was restless and feverish; but on the fifth he slept well, and was much better, as the new fracture-box had been substituted for the cradle, and padded with sand cushions. As the limb lay in the box, it was nearly four inches shorter than its fellow.

On the seventeenth day the wound over the tibia was nearly closed, and the other filled with healthy granulations. Mr. Bowman now flexed the foot a little more on the leg, in order to bring the fractured portions into more complete apposition. On the twenty-fifth day the fracture-box was changed for Liston's splint, altered to suit the case; a padded wooden splint was placed within it on the inner

side of the leg, and the bandage carried up to the thigh, leaving a space to dress the wound over the fibula, which was not entirely healed.

Nothing worthy of note took place until the beginning of April, about three months after the operation, when the callus being found only partial, and bony union not having taken place, the boy was allowed to hobble about the ward on crutches, the leg being encased in a starch bandage. This, however, did not excite any increased action in the parts. At the end of April, the patient begged to go home, and was accordingly discharged.

In June, 1851, two months after his discharge, the boy was readmitted; he had been ill-fed and neglected at home, and permitted to go about without his crutch. The consequence was, that the little callus which had been thrown out was broken down, and the skin over the old wound had given way.

Mr. Bowman finding that the patient was willing to undergo another trial to save the leg, determined to perform the operation recommended by Dieffenbach. On the 12th July the patient was placed on the operating-table, and put under the influence of chloroform. Mr. Bowman made an incision, two-thirds of an inch in length, over the upper fragment of the tibia, close to its extremity, and on its anterior and outer aspect. As soon as the bone was exposed, he applied to it the Archimedean drill, and penetrated into the cancellated structure of the bone. A small ivory peg, half an inch long, which exactly fitted the orifice made, was then introduced into it, and driven in with the hammer. Another incision was then made on a level with the former, over the inner aspect of the same upper fragment, and two others over the lower fragment, and pegs introduced in the same manner as had been done for the first. The fibula was left untouched. The lower fragment was so soft that a needle could be pushed into it, so that the pegs introduced into that part required no force.

Sept. 12th (two months after the operation).—The first peg came away to-day; it is considerably eroded, but whether the bony matter has been absorbed, or whether it has been softened and come away in the pus is uncertain. The second peg was found loosened, but not quite fit to be taken out. Four days after this, Mr. Bowman removed the second peg and a small piece of sequestrum; the other two pegs remain in the bone, and the wounds are healed over. From the softness of the lower fragment in which the pegs are retained, it is to be supposed that the ivory may have been completely incorporated in the bone without having perhaps undergone any change.

Nov. 24th (four months after the introduction of the pegs.)—The union of the bones is very incomplete. Mr. Bowman advised the patient to go into the country with a single gutta percha splint and bandage fixing the ununited parts, the knee being flexed at right angles on the thigh; the boy was also desired to wear a wooden leg, so as to give the ankle perfect rest. The further information which has been received tends to show that up to the time at which we write union had not taken place.

This is altogether an exceptional case—in fact, we are not aware that an attempt was ever made to excite union between fragments which had been lying asunder for thirteen years. It is, however, both satisfactory and instructive to follow the above-described and praiseworthy attempts at saving the boy's foot.

We understand that Mr. Square, of Plymouth, has also tried Dieffenbach's plan, in a case of ununited fracture of the femur; the results were, however, likewise unsuccessful. Pegs were placed in the extremity of the upper as well as the lower fragment, but at the end of three weeks, no attempt at union could be perceived. The thigh was subsequently amputated.

Mr. Fergusson has also very lately resorted to Dieffenbach's operation for promoting union, as related in the following case:—

Case 3. A. B., aged 30, was admitted on July 3rd, 1852, for an ununited fracture of the ulna. The accident was produced thirteen months before, by his arm being twisted several times round by a machinery belt, producing a comminuted fracture of both radius and ulna. Only active measures, in such a case as this, could give any chance of success.

The patient was therefore brought into the operating-theatre on the 10th July, 1852, and narcotized with chloroform. Mr. Fergusson commenced by making a

longitudinal incision behind the ulnar artery, about midway between the elbow and wrist,—when by a careful dissection the bones were fully exposed. It was still somewhat difficult to distinguish the seat of the ununited fracture; but by causing the upper and lower portion of the ulna to move upon one another, it was found that the extremities of the fragments were situated in the wound just made, and surrounded by a fibrous capsule. Mr. Fergusson now passed his knife through this capsule, and proceeded to implant, with the hammer, between the ends of the fragments, a peg made of bone, about two inches long, and tapering to a fine point, having first made a hole for its reception with a common gimlet. Another hole was now made about half an inch from the end of the upper fragment, with the same gimlet, and a second peg (ivory), of an almost cylindrical shape, introduced. A third peg (ivory) was placed in the same manner into the extremity of the lower fragment. The heads of the two latter pegs were cut off with the bones forceps, and the wound closed with two sutures.

Mr. Fergusson remarked, after the patient was removed, that there had been some difficulty as to finding the actual locality of the false joint; but that with the impression that the ulna was mainly concerned, he had made the incision which had exactly exposed the injured parts. Some surgeons might have thought the passing of the knife through the adventitious capsule sufficient for the purpose of exciting inflammation; and others might have been tempted to use a seton; but he (Mr. Fergusson) had preferred introducing a foreign substance *into* the bone in the vicinity of the fracture. He had employed the simple gimlet, which answered well; Mr. Bowman had, in a similar case, used a more complicated instrument, the Archimedean drill.

Mr. Fergusson added that the practice he had just followed was well known to have originated, a few years ago, with Dieffenbach; he was, however, bound to state, that this method had been partially carried out several years ago, by Mr. Watson, of Edinburgh. This surgeon was about to pass a seton, in a case of ununited fracture, when he found it impossible to introduce the skein between the fragments, for this is sometimes extremely difficult to accomplish. Under these circumstances, Mr. Watson thrust a silver probe between the ends of the broken bones, left it, and obtained union. It might now be asked, continued Mr. Fergusson, whether the incision or the silver probe led to the eventual consolidation. He was, at all events, far from wishing to diminish Dieffenbach's merit in suggesting the operation. In fact, it is the duty of the surgeon, in cases which present difficulty, to devise all kinds of plans, which should, however, be based upon sound reasoning. As for himself, he was uncertain, before the operation, regarding the actual mode of procedure he would follow.

Perhaps it might have sufficed to remove the ends of the fragments with the saw, with such a one, for instance, as had been invented by Mr. May, of Reading. This saw was a very ingenious but complicated contrivance, and he (Mr. Fergusson) would prefer the simple straight saw, which had the merit of acting well, and of being very cheap as compared with the circular instrument. The patient just operated upon had very good chance of obtaining union, and he (Mr. Fergusson) had very fair hopes of the case.

The man has since progressed extremely well, and the wound took on a very healthy action. About a fortnight after the operation one of the pegs became loose, and Mr. Fergusson extracted it; and one week afterwards it was found, on the bones being tried, that consolidation was already to a great degree established, It is very probable that in a short time satisfactory union will have taken place.

This case is certainly very encouraging, and well calculated to bring the *pegs* into favour. They are perhaps more useful in ununited fracture of the forearm or tibia than with the femur or humerus.

[The following case is related by Dr. GEOGHEGAN, of the City of Dublin Hospital.

Case 4. Four years previous to admission, the patient, a young man, had suffered a compound fracture of both bones of the forearm. The fracture was very oblique, and situated at the lower third of the forearm.]

Dr. Geoghegan had first recourse to the method of pressure, as recommended by Amesbury, and subsequently to the seton, but without advantage. It was now resolved to try Dieffenbach's plan, and Dr. Geoghegan cut down (by small incisions)

on points corresponding to the middle of the fracture tract of each bone. He then bored a hole, traversing obliquely the line of apposition of the fragments, and penetrating as nearly as possible the entire thickness of the latter, and introduced ivory pegs. A good deal of inflammation and suppuration resulted from these proceedings; and Dr. Geoghegan was obliged, from the intensity of these events, to remove the pegs on the ninth day after the operation. Considerable thickening about the fragments, and, as a consequence, great diminution of mobility ensued. This was, however, not the thickening of real callus, but merely albuminous effusion, which latter was gradually absorbed, and matters remained in their former state.

When the parts had become quiescent, Dr. Geoghegan resolved to afford the patient a further chance. He practised again a small incision over the fracture tract for each bone, introduced a narrow chisel upwards and downwards, and detached and broke up, as far as practicable, the ligamentous connexion of the fragments. Dr. Geoghegan strongly scraped, at the same time, the opposite faces of the latter, so as to expose *a fresh osseous surface*, and open the Haversian canals. This operation, which was subsequently repeated, produced the second time much inflammation, but no *final* benefit.

Now came the question of excision; but Dr. Geoghegan did not propose this formidable procedure, owing to the anatomical relations of the bones and muscles of the forearm, and the indifferent success which had attended the method of excision (notwithstanding the statements of some of its advocates).

The patient has since worn a gutta percha case, and was recommended by Dr. Geoghegan to try the "stimulus of necessity," and use his hand as much as possible. The result of this has yet to be learned.

Dr. Geoghegan has known a case in which the latter method succeeded (aided by restrained motion of the fragments) in the lower extremity, after other means had failed. We should not omit to mention that Dr. Geoghegan's patient, while under treatment on Amesbury's plan, was also, at the suggestion of Dr. Cusack and others, subjected to the action of mercury.

It becomes evident from the preceding cases that Dieffenbach's method is worthy of every consideration, and that it offers a very fair chance of success in cases of ununited fracture; but this method shares the common fate, and may, though carried out with great skill and perseverance, fail to accomplish its object. Some surgeons, however, doubt its powers completely, and attribute the occasional favourable results obtained by Dieffenbach's plan to the perfect rest which is combined with the use of the pegs.

Mr. Syme, for instance, says, in his clinical remarks:—"I was able to say, that in the course of twenty-five years' practice, I had always succeeded in restoring firmness by attention to the insurance of stability in the position of the limb; and I expressed a strong impression, almost amounting to conviction, that various means of remedy, such as setons, subcutaneous division, ivory pegs, &c., owed any share of the credit which they had acquired to the care conjoined with their employment to keep the bones quiet."

We may here mention a case of ununited fracture of the tibia, which was some time ago under the care of Mr. Dixon, at St. Thomas's Hospital. The fracture had remained ununited for a whole twelvemonth, when Mr. Dixon made powerful extension of the limb, upon which something was heard to crack. The leg was cased in gutta percha, and union eventually took place. Now it was suggested that if ivory pegs had here been used, they might perhaps have obtained more credit than they really were entitled to. In fact, a change of action, by whatever means, may sometimes produce union.

Mr. Poland had at Guy's Hospital a young woman, about twenty-four years old, under his care, with ununited fracture of the femur. He gave her good food and plenty of vegetables, made her walk about, cased the limb in a starch bandage, and at last obtained union.

It is extremely probable that one of the most frequent causes of non-union in fracture is an imperfect apposition of the ends of the fragments, or an interposition of muscular tissue. Incomplete adaptation has to all appearance a great share in results of this kind, and this circumstance should stimulate surgeons to pay especial attention to the setting of fractures, and to satisfy themselves, by an almost

daily inspection, that the parts are actually and truly remaining in the position first obtained.

When it is considered that the usual evacuations necessitate an unavoidable amount of disturbance of the whole frame, and that these are very frequently repeated, it is surprising, as far as the femur and the bones of the leg are concerned, that ununited fractures are not more frequently met with. All patients with fractured femur should be placed on those beds which allow of all the functions being performed without the slightest shifting. It has also been suggested that a latent syphilitic taint is perhaps more frequently connected with the occurrence of non-union than is generally supposed.

We shall not omit to quote the excellent results which Dr. Valentine Mott, of New York, obtained by means of the seton. ('Transactions of the New York Academy of Medicine,' analysed in 'British and Foreign Medico-Chirurgical Review, July, 1852.') Dr. Mott gives nine cases of success by using the seton in cases of ununited fracture. He also relates the case of a boy, twelve years of age, with whom the seton failed in an ununited fracture of the humerus (1826). "The ends of the fragments were then sawn off, and a silver wire passed through each, twisted, and brought out externally through a canula. The wire cut out from one of the bones in a few days, and the other was soon after removed. No great inflammation followed, and in a few weeks consolidation was complete." Dr. Mott calls these 'wire sutures,' and the writer in the 'British and Foreign Medico-Chirurgical Review' remarks, "The 'wire suture' was thus employed several years prior to its adoption by Flaubert, of Rouen, to whom Malgaigne attributes its origin."

Ununited fracture, and the use of the pegs, are subjects of so much importance that we have not hesitated to group together the preceding cases, under the impression that the collection of these nosocomial facts may prove of practical utility.—*Lancet, Aug.* 14, 1852, *p.* 152.

67.—ON COMPOUND FRACTURES.

By G. J. Guthrie, Esq.

A fracture of a bone, however *simple* it may be in its nature, is said to be *compound* when accompanied by an external opening in, or a wound of, the soft parts, communicating with the broken bone—a complication which usually gives rise to ulcerative inflammation and suppuration throughout the whole extent of the injury, preventing thereby those milder processes being effected which, under the more favourable circumstances of the skin being unbroken, lead to a speedy union of the broken parts; whence the desire manifested by the surgeon, in ordinary cases of compound fracture, to close the external wound, if possible, but which, from the nature of a gun-shot wound, it is useless to attempt. A fracture is said to be *comminuted* when the bone is crushed, as by a heavy wheel passing over it. It may still, however, be a *simple* fracture, or without an external wound; and is, in that state, much less dangerous than a similar injury accompanied by an external opening, however small, the edges of which cannot be immediately and permanently reunited.

An arm or a leg, as a general rule, is not to be amputated in the first instance, for a compound or gun-shot fracture. An effort should always be made to save it; and, under reasonable circumstances with regard to the extent of injury, the comfort, climate, and ordinary good health of the sufferer, the object will usually be obtained, under good surgical treatment.

It is not so with the thigh. After the battle of Toulouse, forty-three of the best of the fractures of the thigh were attempted to be saved under my direction, and even selection. Of this number, thirteen died; twelve were amputated at the secondary period, of whom seven died; and eighteen retained their limbs. Of these eighteen, the state three months after the battle was: five only can be considered well, or as using their limbs: two more think their limbs more valuable, although not very serviceable, than a wooden leg; and the remaining eleven wish they had suffered amputation at first. Of the officers with fracture of the femur, one, having been taken prisoner during the action, died under the care of the French

surgeons, by whom he was skilfully treated; the other has preserved a limb, which he rather wishes had been exchanged for a wooden leg.

In the five successful cases, the injury was in all at or below the middle of the thigh. In the thirteen others who retained their limbs, the injury was not above the middle third; and of those who died unamputated, several were near or in the upper third, and either died before the proper period for secondary amputation, or were not ultimately in a state to undergo that operation. Of the seven amputations which died, two were at the little trochanter, by the flap operation; and the others were for the most part unfavourable cases. In one case only was the head or neck of the bone fractured. This man lived for two months, and from the dreadful sufferings he endured, it was much regretted that he had not lost his limb at the hip-joint at first. The operation ought, however, to have been the removal of the head and neck of the bone; but he was not seen in time by those who could or would have done this operation, which was then, however, only contemplated for the first time.

Nearly all the wounded, after this battle, had every possible assistance and comfort, from the second day after the action. The hospitals were well supplied with bedsteads—no inconsiderable point in the treatment of fractures, and several of the surgeons had been in almost every battle from the commencement of the war. The medicines and materials for their treatment were in profusion. The sick and wounded (1359 in number, including 117 officers) were in charge of two deputy inspectors-general, ten staff-surgeons, six apothecaries, and fifty-one assistant surgeons; and the whole worked from morning until evening with the greatest assiduity. The surgery of the British army was at the highest point of perfection it attained during the war; and this enumeration is given to show the number of medical men required under the most favourable circumstances for 1500 wounded men, if they are to have all the aid surgery can give them. Doctors are not the most ornamental part of an army, but there are days in a campaign when many poor fellows find them the most useful.

Every broken thigh or leg was in the straight position, and the success was greater than on any previous occasion. Nevertheless, with all these advantages, there can be little doubt that if amputation had been performed, in the first instance, on the thirty-six out of the forty-three who died or only partially recovered, some twenty would have survived, able, for the most part, to support themselves with a moderate pension, instead of there being perhaps five, or at most ten, nearly unable to do anything for themselves. The Baron Larrey, with the *élite* of the military surgeons of France, as well as those of Germany, has maintained this opinion; and in the present state of our knowledge, it is perhaps the safest practice, particularly under doubtful circumstances, in which it cannot be ascertained whether rest, the best surgical care, and comfort may not be wanting, without all which a favourable result cannot be expected.

§ The peculiar difficulty in treating a gun-shot fracture takes place when the bone is splintered for some distance, as well as broken. In these cases, inflammation occurs internally in the membranous covering of the cancellated structure of the bone, which ends in the death of the parts affected; whilst the periosteum takes on that peculiar action externally, which ends in the deposition of ossific matter around the splinters which have lost their life, and are enveloped by it. The bony matter, at first small in quantity, is gradually augmented, and deposited for some distance in the surrounding parts, so that it has been known to include the neighbouring vessels and nerves in less than twenty days; and at the end of a few weeks the quantity of ossific deposit is often very remarkable. Each splinter of bone becomes the sequestrum of a necrosis, in a similar manner as it is known to occur in the bones of young persons spontaneously affected by this disease, with this essential difference, that in the idiopathic disease there is only *one*, as if worm-eaten, sequestrum, perhaps the length of the shaft of the bone, and easily removable by one operation, while there may be in the traumatic disease several dead centres of dead deposit, each of which requires to be removed by an operation to effect a cure. This new bony deposit will often be half an inch and more in thickness, and at a late period is as hard as the old bone. The repetition of operations required in such cases is very distressing, particularly in the thigh, in which the disease often continues for months, and even years.

§ A musket-ball will often lodge in the less dense parts of bones, such as the great trochanter and condyles of the femur, without fracturing the bone; it will sometimes even pass through the femur above and between the condyles, merely splitting, but without separating the bone in parts or pieces. Balls sometimes lodge in the shaft of the femur, without breaking it, and frequently do so in the tibia, the humerus, the bones of the cranium, and even in others of less size. Balls thus lodged will sometimes remain for years—nay, during a long life, without causing much inconvenience. It is, however, generally the reverse, and they are often the cause of so much irritation and distress, that the sufferers are willing to have them, and even their limbs, removed at last, at any risk.

Whenever, then, a ball can be felt sticking in a bone, although it cannot be brought into sight, it should, if possible, be dislodged and removed by the trephine, by small chisels, by small strong-pointed curved elevators, or by any of the screws invented for the purpose, which have sometimes been found efficient. An apparently useful instrument of this kind is attached to the forceps for extracting balls, more used in France than in England. When the ball can be seen as well as felt, the surgeon must be guided by his own experience and judgment with respect to the most fitting instruments. It is to be removed, if possible, whatever may be the means used for its abduction, after the wound has been properly enlarged for the purpose.

§ When a ball merely grazes a bone without breaking it, and passes through the limb, and no splinters can be felt by the finger, dilatation is unnecessary in the first instance; although some small splinters may be cast off subsequently, or a layer of bone may exfoliate, requiring assistance for their removal.

The bone may be fractured in a case of this kind transversely, and will require only the simplest treatment in an almost similar manner.

§ If the ball should enter and be flattened against the bone without breaking it, and lodge against it or in the soft parts, it should be sought for and removed. When the ball is flattened and the bone broken, it may lie between the broken extremities, and even lodge in one of them, rendering the case more complicated, and the necessity for close investigation more urgent.

§ When a ball strikes the shaft of a bone, such as the femur, directly and with force, it shatters it often in large, long, and pointed pieces, retaining their attachment to the muscles inserted into them. A fracture of this nature in the middle of the thigh will often extend downwards into the condyles, and as high as, although rarely into, the trochanters. These are cases for immediate amputation.

§ Gun-shot fractures of the head and neck of the femur have been hitherto fatal injuries, unless the whole extremity has been removed. It is hoped death may be prevented without this most formidable operation, by the removal of the head and neck of the bone. If the upper third of the femur, below the trochanter, is badly fractured, and an attempt is made to save the limb, death generally occurs after several weeks of intense suffering. Few escape with a useful limb, which had been badly fractured in the middle part, their strength and health being destroyed by the pain, suppuration, and constitutional irritation which ensue.

The least dangerous and the most likely to be saved, are fractures of the lower third, or at most the lower half of the thigh, and when they do not communicate with the knee-joint an attempt ought always to be made to save them.

§ The preservation of a fractured femur from a musket-ball, when splintered to any extent, ought only to be attempted if the principal splinters can be removed. When the splinters of the femur are long and large, it has been supposed that if they retain their attachments to the soft parts, they may be placed in apposition and preserved. It ought, however, only to be attempted under the most favourable circumstances, and will not even then succeed. In the humerus it is different. An examination by the finger, in the first instance, is necessary to ascertain the extent of the injury to the bone, and to enable the surgeon to remove the broken portions, as well as the ball or any extraneous substances which may be in the wound. The incisions necessarily required for this purpose in the thigh are sometimes neglected, or the surgeon refrains from making them from the great thickness of the muscular parts, and from the wound having taken place on the inside, near the great vessels, so as to render incisions of sufficient size or extent in some degree dangerous. The thickness of the muscular parts is not a sufficient reason

for avoiding an incision, neither is the vicinity of the great vessels and nerves, although they may not be divided; and if the situation of the bone on the outside of the thigh be attended to, the broken portions may sometimes be got at, at that part, if not on the inside. If this cannot be done, amputation had better be had recourse to. The object of the examination of such a wound being to ascertain the state of the fracture, and to remove the splinters and any extraneous substances, the extent and number of the incisions must depend on them; the true principle of what has been called dilatation in wounds. If the ball should have merely struck and grazed the bone, and passed out, causing a transverse fracture only, there is no necessity for making incisions at the moment, although one or more may be subsequently required to aid in the discharge of an exfoliated piece of bone, or of a splinter which may have been overlooked. If the ball lodge deeply in the soft parts, after breaking the bone, it should be removed, if practicable, by a second or counter opening, and a free vent should always be made for the discharge. It may be, however, laid down as a general rule, that whatever is likely to be required during the first few days had better be done on the first than on the second or third; for after inflammation has commenced, any handling or examination of the limb, however gently made, gives great pain.

§ After the first incisions have been made, and the larger splinters, which can be felt, have been removed, a secondary danger occurs from those which are smaller, and may have been overlooked, or have not been discovered. This arises from the enveloping of these splinters in the new ossific matter described as being formed by the inflamed periosteum. This evil must be prevented by a careful examination of the wound when suppuration has been fully established, and the sensibility of the parts is in some degree diminished, when, if loose splinters of bone are felt, they ought to be removed by incisions carefully and gently made to the extent which may be required. If this is not done early, the ossific deposit will take place around, and shut them in, even if the wound should close, which it usually will not. Their retention is accompanied by a firm thickening of the part, and in due course of time a spot of inflammation implies the formation of an abscess, and an ulcerated opening through the new bony deposit. When this abscess breaks externally, the probe will pass through the hole in the new bone, and rest on the rough, dead, and now moveable splinter, the extraction of which can alone afford permanent relief. The earlier this is done the softer the ossific matter will be, and which at an early period will cut like Parmesan cheese intermixed with lime. If deferred until the bony matter is quite hard, it must be cut through with the chisel, or bone scissors or forceps, the application of which sometimes requires great force.

§ The position of the patient in a gun-shot fracture of the thigh or leg is of the utmost importance. He should lie on his back, and the limb should be straight. It is almost impossible to keep a man's thigh in the bent position, or on its side, without his turning on his back, and the union of the bone, if it take place at all, must be then at an angle. The bent position forward, or on an inclined plane, is defective, inasmuch as the matter, which must necessarily be secreted in great quantity, will gravitate backwards in spite of every care to prevent it. When a proper bedstead is used, a slightly inclined plane will sometimes be advantageous at a later period, when the body may also be raised, even to the erect position, the principal object being to take off the action of the two muscles inserted into the smaller trochanter, which, with the rotators behind, raise and evert the upper end of the broken bone. This direction outwards, should be met by a similar direction of the lower part of the bone, and by the application, from time to time, of a proper splint, compress, and bandage, on the elevated bone, if they can be borne with perfect ease.

§ Splints are of various kinds, and made of different substances. The discovery of gutta percha has enabled some to be made of that substance, which, when moulded into sheets, of from one to two eighths of an inch in thickness, can be rendered soft and pliable by the application of hot water, regaining its firmness as it dries. Splints can thus be made of any size or length, and of any form, with apertures, if necessary, for the passage of the discharge from the wounds. Leather tanned without oil, and called splint-leather, is equally useful, and if, when dried, the splints thus made become too hard, and press unequally, they can

be softened by hot water, and removed and replaced with little comparative inconvenience.

One wooden splint of more than the length of the limb, and somewhat similar to that called Desault's, is absolutely necessary for the thigh, if it can be borne, as a means of extension, or rather of preserving length. A shorter one on the inside, and one behind, will sometimes be required to complete the set. A short one may be wanting for occasional use in front.

§ The bones of the leg being more exposed, admit of greater liberties being taken with them, and of larger portions, or even parts, being taken away successfully, than ought to be attempted in the thigh. A leg should therefore be rarely amputated for a fracture from a musket-ball. The splinters should be removed to almost any extent and number, and irregular portions sawn off, even if both ends should be thus implicated. If one bone of the leg remains uninjured, the case becomes comparatively simple. The position should be straight on the heel, as a general rule, admitting of few exceptions.

§ The best apparatus for a compound fracture of the leg in either civil or military surgery, and particularly in the latter, is that contrived by Mr. Luke, which may be seen in use at the London Hospital, and is supplied by Mr. McLellan, 3, Turner-street, Whitechapel-road. It is a simple iron cradle of small size, such as is used to guard a limb from the weight of the bed-clothes, composed of three bars or large segments of a circle, united at their middles and ends or sides as all cradles are, by a bar of iron of equal thickness. This is placed on a board a little wider than itself, with a ledge or bar at each side to prevent the cradle from moving, which is aided by two buttons or little pieces of wood on each side, which being moveable, turn over the iron bars, and thus render the board and cradle one firm piece. In this the leg is to be slung, to the centre bar above, by ordinary tapes. A splint made of copper, to prevent rust or injury, hollowed to receive the leg, extending beyond the foot with a foot-board, and beyond the condyles of the femur above, enables the tapes to be passed under the limb for slinging it; whilst from the extension of the splint beyond the condyles, it causes the leg and thigh to move together, in a manner which will often prevent the pain which follows a sudden motion of the patient. Solid wooden side splints are still wanting, and these should have holes cut in them to allow vent for the discharge and for the application of the dressings; or if a portion of the splint, say the middle, should require removal altogether for this purpose, the upper and lower parts may be united by a semicircular bar of iron, at the pleasure of the surgeon, within which the dressings may be applied, and by which the splint is rendered firm. When the leg is thus slung, the knee is somewhat bent, the thigh is raised, the muscles of the leg behind are relaxed, and the patient can be moved with much greater facility than with any other apparatus; one great advantage of this apparatus is, that it can be used with effect even if the patient is obliged to lie on the ground. It admits of being slung as a whole in a spring cart, by additional but strong elastic straps fastened to, or applied on the under part of the board, and thus a double slinging motion may be obtained, when the sufferer is obliged to be moved.

These splints are so portable that they may be carried into the field or upon the deck of a ship, to bring the patient to the surgeon.

§ The *arm*, when fractured by musket-shot, admits even of more strenuous efforts being made to save it; and from its smaller size, and the more ready exposure of the bone or bones when badly broken, the danger is less. If an artery should yield by ulceration, it should be laid bare by operation, and a ligature placed on each bleeding end. An additional or second wound in the forearm only complicates the case, and the loss of a finger or two does not augment the danger. In fact, amputation should rarely take place in the first instance; and only in the second when mortification has commenced, or the strength and health of the patient will no longer bear the drain upon them. A great advantage is derived from the facility with which the upper extremity can be supported, when compared with the lower, and the aid to the general health which may be obtained from the locomotion sufferers with broken arms are capable of undergoing.

§ In making incisions for the removal of splinters of bone, both at an early and at a late period, and particularly in the latter, when the soft parts are all

impacted together, and *nothing is gained beyond what is cut*, the course of the trunks of nerves, as well as of the great arteries, should be carefully attended to, and these parts avoided; for a successful cure of the fracture will be much deteriorated in value, if accompanied by a loss of motion and sensation in the hand or fingers.

§ Splints for the arm should be made of solid materials, although light; some a little hollowed, and at a right angle, to correspond with the bend of the arm, and to admit of a little motion of the radius and of the fore-arm and hand, which relieves the position, is more comfortable for the sufferer, and tends to prevent stiffness of the elbow. The pads or lining for the splints should be made of cleaned or carded wool, rather than of tow or old linen, protected by some one or other of the modern modifications of caoutchouc.—*Lancet*, *Aug.* 28, 1852, *p.* 188.

68.—ON FRACTURED RIBS CONNECTED WITH EMPHYSEMA.

By John Hilton, Esq., F.R.S.

[The following case is a good example of this complication. Mary Ann H., 25 years old, in a quarrel with her husband, was severely beaten by him with a poker about the left side. On admission, fractures of the fifth, sixth, seventh, and eighth ribs were detected, with a considerable amount of subcutaneous emphysema; there was intense pain at each inspiration, and she was distressed by a severe cough. Her side was tightly strapped. Twenty minims each of antimonial wine and tincture of henbane were ordered to be taken in a mixture with acetate of ammonia every four hours. Rapid improvement immediately took place, so that on the fifth day she left the hospital at her own request. Mr. Hilton remarks:]

You will observe this case presents one special and distinct feature—viz., the emphysema supervening upon the fractured ribs, and that is the reason for my adducing it. The latter injury was inflicted by direct violence; it is very probable, or almost certain, that the instrument used by the husband (the poker) drove the fractured ends of the ribs inwards and that one or more of these wounded the lung; but the elasticity with which the ribs are endowed enabled them to resume their original position,—to rebound in some degree from the lung, and leave an aperture through which the air escaped into the external areolar tissue, thus producing the emphysema.

But in considering these pathological phenomena, it may be asked why the air did not escape into the pleural cavity? But before discussing this point, just cast a glance on this diagram; it represents a transverse section of the chest; it brings to your recollection that the œsophagus, pneumogastric nerves, thoracic duct, aorta, &c., surrounded by areolar tissue, occupy the posterior mediastinum; and it well shows in how close a contact are the pleuræ pulmonalis and costalis, merely, at most, a synovia-like fluid intervening. Now, you see, that after wounds of the lung, there is nothing to prevent the air passing into the cavity of the pleura, and you will understand how it may, by its accumulation there, cause the lung to be compressed towards the spine and median line of the chest. But you have heard, amongst the circumstances of the case, that the patient is a drunkard, and you are aware that with such people pleural adhesions, as the result of pleurisy, are very frequent. This woman was probably so situated: the adhesions between the pleuræ, closing the interpleural space, prevented the air from passing into the otherwise cavity of the pleura (where it would have caused much distress of breathing and danger), and compelled it to go direct into the subcutaneous areolar tissue. I think I may say, that in this patient the habits of intemperance, though very baneful in the end, had, under these circumstances, so far an advantageous and a beneficent effect.

From the account of the case, we learn that the patient's chest was strapped in the manner I have described before; my object here was to prevent the external and internal parts from moving upon each other. Without going into a detail of the direction of the movements of an expanding lung, I may say in general terms the lungs expand during inspiration from their own centre, whilst the costal

parietes of the chest, having their fixed points above and posteriorly, move upwards and outwards. These parts, with their pleural surfaces, therefore, do not move in the same direction. Hence a tendency of the apertures in the pleura pulmonalis and pleura costalis, to lose their relative position of directly opposite each other, as they were at the moment of the accident, and a danger of the air passing from the lung into the cavity of the pleura. The strapping was then applied, in order to keep all the points of the thoracic parietes and lung exactly opposite each other, or as nearly so as possible, and the two apertures just mentioned in direct communication. An important point to notice is this: by means of perfect quiet the wound of the lung is extremely likely to be sealed up with lymph in the space of twenty-four hours, but such would not be the case if free and tumultuous movements were permitted.

Allow me now to make a few general remarks on emphysema. What is meant by this term? It might be called an escape of air within the economy, in varying directions, according to the circumstances of the case. Now, as to emphysema as connected with fractured ribs, you must observe, that when the fracture is not associated with an external wound, it may at once be inferred that the air which is escaping in the areolar tissue must have been freed by a wound of the lung. When, however, an external wound does exist, and the emphysema is limited and stationary, such diffusion of air may have been caused by its admission through the external wound. Indeed, I have seen a limited emphysema occur in cases of compound fractures of other bones besides the ribs, as of the skull, the thigh, leg, and lower jaw. When the skull is broken and emphysema is produced, there is generally a wound of the frontal bone, implicating the frontal sinus, and the air passes under the occipito-frontalis muscles. Thus, in fractured ribs, with emphysema, we might suppose the lung uninjured if there be a wound of the skin; but if there be no such external wound it is certain that the lung has suffered perforation.

But besides these circumstances, you should bear in mind that areolar emphysema may occur from without, independently of broken ribs, by an external perforation of the skin. Again, emphysema may occur from within, independently of broken ribs, by a rupture of the lung. In such a case, the course of the air will be determined by the giving way or not of the pleura pulmonalis. If the latter be ruptured, the air will of course escape into the pleural cavity, causing great distress of breathing by compressing the lung, though old pleuritic adhesions may limit the diffusion of the air, and considerably diminish the distress. If the pleura pulmonalis be not ruptured, then the course taken by the air will be very peculiar; it may come to occupy the anterior and posterior mediastina, and even raise the pleura from off the diaphragm.

I will just adduce the case of a boy in whom such a lesion took place; you will find it extremely instructive. The patient was about eleven years of age, and had the misfortune of being run over a short time before he was brought to the hospital. The vehicle had passed over his chest, and when admitted he was under the influence of a severe shock. The whole frame was cold, the boy was very low, and he could not swallow. There was no external wound whatever, but the whole of the neck and face were emphysematous, and he was in the greatest possible distress in his breathing. When touching the radial artery, crepitation could be felt, the latter being of a deep kind, and appearing to accompany the artery only. It was, in fact, extremely likely that the air had crept down the sheath of that vessel, and had, according to all appearance, diffused itself with the arterial system of tubes, rendering the pulse so extremely feeble.

The boy was put to bed, and stimulants were given him. I at the same time made incisions into the neck, in order to free the accumulated air, and this measure seemed to give the boy great relief. The emphysema gradually went off, and the patient was progressing very favourably, when, after about ten days, he imprudently exposed himself to cold, was attacked with pneumonia, and died. On examination, no fractured ribs were found, although carefully sought for, and the fearful emphysema which had ensued upon the accident must have arisen from a rupture of a certain number of pulmonary cells, without associated broken ribs.

You will see how obscure the full comprehension of such cases must naturally be; and as it is important that you should be able to form a tolerable diagnosis of

such cases, I will bring another before you, replete with interest and instruction, and which will fully exemplify the extraordinary course of the air when it escapes from the air-cells, but with an unbroken pleura pulmonalis.

The case refers to a private patient of mine, who was formerly a pupil here. He was about twenty-six years of age, and suffering from phthisis, and had been ill during several months. One evening while straining at the water-closet, he felt something suddenly give way between his shoulders; he was then attacked with dyspnœa and difficulty of swallowing. The distress in breathing and difficulty in swallowing increased rapidly, and I was hastily sent for about four or five hours after he had felt something give way in his back. I found him sitting up in bed, supported by pillows; his breathing most difficult and gasping; pulse small, and very weak; hands and feet, nose, ears, and lips, cold and congested; pain in his back; his voice feeble, and incapable of speaking a long sentence, so small was the quantity of expired air; any such attempt at speaking augmented his distress; he was therefore directed not to say a word, but to write his wishes. The crepitation of emphysema was felt throughout the whole of his neck, extending amongst the deep structures under the deep fascia, making his neck thick and large, and rendering the larynx and trachea almost fixed. The air occupied to distension all the sub-fascial space reaching to the temporal fossa, and producing a bulging of the temporal aponeuroses. The air occupied the neighbourhood of the clavicles and the axillæ, but had not been diffused, either superficially or deeply, beyond this in the upper extremities, excepting in the course of the brachial artery, and its divisions into the ulnar and radial arteries; along the tracks of these blood-vessels the minute crackling of extravasated air could be distinctly recognised on pressure by the finger; no other emphysema existed at that time below the shoulder. The exterior of the chest under and about the pectoral muscles was occupied with air. But even with this extent of emphysema was a disproportionate shortness of breath. Ether and ammonia were administered in small quantities; for only a little could be swallowed at a time, and that with difficulty. His dyspnœa proceeding, and his life in immediate danger from suffocation, I made a free, clean, and direct incision nearly an inch in length on each side through the cervical fascia, at the posterior margin of the sterno-cleido-mastoideus; the air came puffing out of the incisions. This escape of air or removal of pressure gave him some temporary relief; subsequently, other incisions were required, and always afforded some benefit to the patient's condition. Notwithstanding all such efforts, and the effects of the administration of stimulant medicines, the dyspnœa continued, and so did the difficulty of deglutition; indeed, after a few hours from my first seeing him the attempt to swallow was dispensed with, and enemata, both stimulating and nutritious, were frequently administered, but without permanent effect, and he died on the second day after this attack, Oct. 13, 1845.

I will now trouble you with a detailed account of the post-mortem examination, which took place forty-eight hours after death. There was very little evidence of putrefaction; none was noticed, except at the posterior part of the body, the result of gravitation. The emphysematous state of the areolar tissue extended from the neck, which was very full of air, into the face, puffing the cheeks, and rendering them white from distension. There was also air diffused throughout the back, chiefly, however, on the right side; and the parietes of the thorax were everywhere emphysematous. Neither the right nor the left leg was affected; but the parietes of the abdomen, superficially to the muscles, were slightly emphysematous. There was no emphysema in the muscular layers forming the walls of the abdomen; but the interposed areolar tissue of the thoracic muscles was occupied by air. Cavity of the abdomen: no air behind the peritoneum, nor any fluid in that cavity; liver large and coarse; bile pale; gall-bladder small; spleen natural; kidneys large and coarse, the cortical structure becoming white with deposit; bladder small and empty: stomach and intestines free from disease. On raising the sternum, the areolar tissue of the anterior mediastinum was found occupied by air, distending the areolar tissues immediately surrounding them. This emphysema, following the defined course of the phrenic nerves, reached to the diaphragm, and had separated the pleura from that muscle to the extent of two or three square inches on the left side, and to a less extent on the right side.

I will just make a short pause here, to remind you that the phrenic nerves, at

the upper part of the chest, enter and then pass through a sort of fibrous tube between the pleura and pericardium; air had penetrated through this tube, and had, by compression of the nerve, rendered respiration so difficult. Along this phrenic nerve the air had then descended to the diaphragm, where it acted with such force as to raise the pleura lining the muscle. You may imagine, from the consideration of the latter fact, how much pressure must have been exercised on the phrenic nerve, for the connexion between the pleura and convex surface of the diaphragm is very firm, and great force is of course required to raise the one from the other. But the diffusion was very extensive; the posterior portion of the subpleural space between the ribs and the spine, and the posterior mediastinum, were quite full of air.

No air had penetrated into either pleura, nor into the pericardium, the latter being occupied by about an ounce of fluid, slightly tinged with blood. Heart large; left ventricle slightly hypertrophied; mitral valve decidedly contracted and thickened; aortic valves thickened, and somewhat rigid; some opaque deposits, about the size of pins' heads, were observed in small groups under the lining membrane of the ascending aorta, a little below the origin of the arteria innominata, and opposite to the aortic opening. The blood was black and feebly coagulated—firmer, however, on the right side than on the left. No air had passed through the pleura or pericardium; no exosmosis or endosmosis of air.

The left pleura was free from adhesions, except towards the apex on the posterior part, where old ones were found; the rest was free. No effusion of fluid was noticed. On raising the left lung, the left serous wall of the posterior mediastinum was seen projecting outwards towards the lung, being forced into that direction by great distension of air. Near the mediastinum the pleura costalis was, in various places, raised from the ribs by air, and the same thing had occurred slightly where the pleura passes from the sternum over the cartilages of the ribs.

There existed strong adhesions opposite the middle of the convex surface of the right lung and the fifth rib; and around the base of the pulmonary end of this adhesion the pleura pulmonalis was thickened, opaque, and somewhat contracted for about two inches square. Under this was subsequently found a cavity, which might have lodged a pigeon's egg, lined by a well-marked opaque membrane.

Extensive adhesions of the right pleura were noticed near the apex of the lung, towards the median line, reaching along the concave surface of the lung to near the entrance of the right bronchus into the lung. The rest of the pleura was free from adhesions.

It was now important to discover the sources of the extravasated air and its point of escape from the lungs. After very careful inflation of these organs in situ, it was ascertained that the air had escaped from a cavity covered by the above-mentioned adhesions, just over, and communicating with, the right bronchus. The air issued at two points, one through the wall of the cavity direct into the posterior mediastinum; the other outlet took a course under the pleura pulmonalis to the point of entrance of the bronchus into the lung, raising the pleura pulmonalis from the lung, and thence proceeding into the posterior mediastinum, the openings being very small. The pulmonary cavity presented cavernous walls, and was occupied, in part, by dark, offensive, and broken-down pulmonary tissue, the result of recent mischief.

Sections of the right lung presented several small cavities in the upper lobes towards the median line. The whole of the lung was filled with small accumulated inflammatory tubercles, in groups about the size of large shot; others as big as peas. Numerous lobules presented the ordinary pneumonic consolidation.

No cavities were found below the upper lobe; the left lung was studded with the same kind of tuberculous deposits, but there were no cavities. Recent pneumonia had occurred here and there in lobules or groups of lobules.

The bronchial glands were enlarged. The larynx and trachea presented nothing remarkable.

This case clearly demonstrates the course of the air when emphysema arises without rupture of the pleura, or when it has entered the posterior mediastinum. It is very probable, that whilst the patient was straining, the air had been forced from the bronchial tube into the cavity adverted to, and thence into the posterior mediastinum. Now, you are all aware that the latter is continuous with the middle

mediastinum, which transmits the phrenic nerves, and also with the anterior mediastinum, and that its boundary above is the cervical fascia, which forms a dome over the entrance of the chest. This dome, as you know, is perforated with holes for the passage of vessels and nerves; and it is through these holes, into the sub-fascial spaces, and along the sheaths of the blood-vessels and nerves, that the air passes and diffuses itself, pursuing the course of the blood-vessels, much in advance of the more general diffusion, and so presenting itself, as it were, a pathognomonic or characteristic indication of the escape of the air from the lung into the posterior mediastinum, and distributed therefrom. The air, having escaped from either bronchus or the thoracic portion of the trachea, might produce the same series of symptoms as observed in the case now before your notice. Hence you may derive valuable practical information. When you, for instance, find the neck full and crackling with air, and the large arteries only of the upper limbs surrounded by it, and if there be no external wound and no fractured ribs, the inference must be, that the air has escaped from a bronchus or the trachea, and found its way into the posterior mediastinum. Recollect, then, these points when you come in contact with such a case, so that you may be enabled to form a correct diagnosis.

The peculiar dyspnœa noticed in these cases is owing to the compression, by the air, of the phrenic and eighth pair of nerves; and the difficulty of swallowing arises from the pressure exercised upon the œsophagus by the air diffused through the posterior mediastinum. The air, traversing the limbs, exercises a compression upon their arteries; hence arises an accumulation of blood in the aorta and left side of the heart. And it should, lastly, be observed, that if the air in the posterior mediastinum raises, after great tension, the pleura costalis, then the air reaches the areolar tissue of the exterior of the chest; and finally produces the ordinary external emphysema. When you see these symptoms manifested in a given case, I expect you will have no difficulty in determining the nature of the accident.

But you will do well to remember that these cases of emphysema without fractured ribs are the exceptions; most frequently there is a wound inflicted upon the lung by the ends of fractured ribs, and emphysema, pursuing the ordinary course, thus ensues. You shall notice, besides, that a severe blow upon the chest, or other external force acting violently upon it, may, without causing any fracture of ribs, lead to a tearing of the interior of the lung, almost immediately followed by copious bloody expectoration, this symptom not being accompanied by any recognisable emphysema, nor any evidence of broken ribs. Pneumonia may occur under similar circumstances, from the lung being bruised. I was informed by one of the pupils, of the case of a prize-fighter who came to his death in this manner: he received a severe blow upon the chest, which, without breaking any ribs, literally tore the lung; extensive extravasation and spitting of blood immediately followed, and he died in a short time. The post mortem examination revealed the existence of the lesion which I have just mentioned, and no broken ribs.

But, I repeat it, the most common association of emphysema from external injury, is *fractured ribs* and *perforation of both pleuræ and the lung* by the ends of the fractured ribs. It may happen that the latter remain fixed in the lung; the mischief is then of a very severe nature. Or, after having been thrust by external force into the lung, they may resume their position, leaving an opening in the lung through which the air escapes into the pleural cavity; and when an opening has taken place in the pleura costalis, the air may be driven to the exterior of the chest.

As to the course which the air takes, it must naturally be determined by the continuity of the areolar tissue, and the attachments of fasciæ. As to the *extent* of the emphysema, you easily perceive that it will vary in different cases, according to the size of the openings of communication with the lung. In the first case which I this day brought before you, it was reported as considerable, yet in three days it was nearly gone.

This rapidity in the disappearance of emphysema naturally suggests the question as to what becomes of the air thus diffused through the subcutaneous cellular tissue. We find that after a few days the air is absorbed; but is it absorbed by the lymphatics or veins, and carried into the blood? Is it possible that so much air can be mixed with the blood without very serious, if not fatal consequences? I very strongly doubt that this kind of absorption takes place. Does the air escape through the skin or mucous membrane? I know not; it really disappears, but

by what channel is not explained. It might be worth while to put a patient of this kind into a warm bath for as long a period as is quite safe, to observe if there be any escape of air from the surface of the body.

Now, as to the prognosis of cases of this nature, I consider that emphysema need create no alarm, except in relation to its pressure upon the blood-vessels (especially the veins), or other parts important to life, such as those which minister to the respiratory functions. It is plain that independently of any uneasiness which the trachea, lungs, or pneumogastric nerves may experience, the pressure of air upon the muscles of respiration impedes, and interferes with, their free action. Another source of danger should not be overlooked—viz., the fact that the pressure upon the superficial veins occasions a great accumulation of blood in the interior of the body, more particularly at the heart and lungs, which organs are already overburdened by the immediate results of the fractured ribs.

You will be pleased to notice that the same phenomena are observed in general anasarca. If, then, emphysema of the sub-cutaneous cellular tissue be connected with some danger, it becomes a matter of importance that such cases should be properly treated.

I would advise you not to be in a hurry to interfere; but when you wish to give relief, it may be done by puncture or incision. Punctures are sometimes made into the emphysematous parts, and they are strongly recommended by some surgeons; but I prefer incisions to punctures, as the latter, as far as I have seen, act very unsatisfactorily. These incisions should be made with care, and important parts be sedulously avoided; you will find that a length of half an inch will be quite sufficient, but the incisions must be precise, clean, done at once, and deep enough to give free exit to the air pent up in the cells of the sub-cutaneous areolar tissue. Do not tear or lacerate the walls of the incisions by introducing the finger or forceps, for the purpose of enlarging them; for if the cellular tissue be lacerated into shreds, it is more likely to induce coagulation of the blood associated with the incision, and so contribute to a closing of the interfibrillar spaces of the areolar tissue; indeed, without this additional interference with the passage of the air through the incision, the air itself in passing seems to have a tendency, by its drying effects upon the exposed structures, to seal the areolar tissue; hence it becomes necessary to make more incisions. In anasarca, however, punctures act very favourably, and produce great relief, principally by disencumbering the respiratory muscles of their load of fluid, and so permitting respiration to be more freely performed. Such punctures also allow a great accumulation of blood in the superficial veins, and thus act very beneficially by relieving internal congestion. Precisely the same reasons, in explanation, and as principles for practice, apply to cases of emphysema. I have, finally, to observe, that in cases of extreme and progressing emphysema from fractured ribs, unconnected with an external wound, it will be advisable to cut down freely to the fractured ribs, if feasible, in order to make an external wound, so as to allow the air to pass towards the external parts and exterior of the body, rather than accumulate in the chest. I have done this in practice with great advantage. You can thus give free exit to the air; such measures will be eminently necessary when you perceive that a dangerous kind of emphysema is making progress.—*Lancet, May* 29, 1852, *p.* 507.

69.—*Simple mode of applying Pressure in Chronic Enlargement of certain Bones, &c.*—[Dr. Inman, of Liverpool, records the following case:

M. C., a delicate girl, three years of age, had a swelling of the left knee-joint, which was three-quarters of an inch larger than the right, due to an enlargement of the head of the tibia and condyles of the femur.]

Considering this to be a case more likely to be benefited by steady pressure than by more severe remedies, I had recourse, at first, to strapping; but finding this of no use I directed the mother to procure a piece of thin vulcanized India-rubber cloth, which she was to shape to the knee, allowing an interval in front of about three-quarters of an inch. The edges were to be bound by a piece of thin leather, and a piece of wash-leather was to be placed as a tongue between the laced portion and the knee. Holes were to be made in the cloth behind the bind-

ing, and the whole was to be laced like ladies' stays. The elastic was to be worn during the day and night. Exercise was not prohibited, and no medicine was ordered. I saw her again in ten days. The bandage had been worn for fourteen hours daily, and taken off at night. The knee was reduced a quarter of an inch in circumference.

In ten days she called again, complaining of pain and œdema of the leg, in the evening, from pressure. On removing the elastic, whose edges now overlapped, I found the knee restored to its normal size and shape. The child could run about without pain or inconvenience. I directed the disuse of the bandage, unless the swelling should return; and told the mother, that, though I could not promise that there would be no return of the complaint, I considered the child as cured.

It is unnecessary to make any long comments upon this case. The fact of a morbid deposit in bone being absorbed, or, I might almost say, a threatened white-swelling, cured in three weeks, without blisters, issues, or caustics, without confinement, or even complete rest, is sufficient to speak for itself. Of course, such a plan can only be adopted when there is no reason to believe that active inflammation or purulent deposits are present, and where there is no severe pain.

The only novelty in the idea is, probably, the kind of elastic adopted, which is superior to the elastic web, both on account of its cheapness and its smoothness.—*Med. Times and Gazette, Aug.* 28, 1852, *p.* 223.

70.—*On the Pathology and Treatment of some obscure Cases of long-continued Pain in Bone.* By HENRY LEE, Esq.

It appears that long-continued pain in bone may arise from a variety of different pathological conditions, and that the chronic irritation, which precedes the deposit of new bone, may depend, among others, upon the following local causes:—1. Upon the formation of pus within the bone. 2. Upon the deposition there of more solid material arising from the poisons of mercury, or syphilis. 3. Upon a collection of tubercular matter in bone; or 4, upon the presence of a necrosed portion of cancellous structure.

When the source of the continued irritation is thus situated within the bone itself, it seems not unreasonable to conclude that a similar plan of treatment would be available, from whatever cause that irritation may arise; and the results hitherto obtained would appear to lead to the inference that relief may be expected from an artificial opening in the several classes of cases.

Wherever there is reason to suspect that pain in a bone is kept up by the presence of some morbid or foreign matter in its interior, or by the pressure produced by a redundancy of bony deposit, it appears evident that the removal of a piece of the shell of the bone is the rational mode of treatment. An opportunity is thereby afforded at once for the escape of any confined matter, and the tension of the parts is relieved; and it appears not improbable, from the favourable effects hitherto obtained by this mode of treatment, that it may hereafter be extended to the relief of many cases of protracted and obscure affection of the osseous system.—*London Journal of Med, Oct.*, 1852, *p.* 889.

AMPUTATIONS.

71.—ON AMPUTATIONS.

By G. J. GUTHRIE, Esq., F.R.S.

[Mr. Guthrie commences some very important observations upon this subject in a series of lectures in the 'Lancet,' by considering the necessity of a tourniquet. He says]

§ As a tourniquet cannot be applied in amputation at the hip-joint, nor even at that of the shoulder-joint, without doing harm, its inutility is proved in the greatest operations; and recourse should not be had to it in the smaller or less dangerous ones, provided sufficient assistance can be obtained. When the surgeon

has only one assistant, he should apply a tourniquet; or even if he should have several bad ones on whom he cannot depend.

§ There is always more blood lost, and particularly in secondary amputations, when a tourniquet is used, than when the principal artery is compressed by one assistant, and two others are ready to press on the outside of the flaps, or upon the divided vessels, with the ends of their fingers; the force necessary to prevent the passage of blood through the common femoral, or the axillary artery, being merely that of the finger and thumb, applied in a very gentle manner, or even of the end of the fore-finger of a competent person. I have rarely applied a tourniquet since 1812, and few persons have done more formidable operations under more difficult circumstances. The ancient illusion with regard to the necessity for tourniquets in amputation, must be given up, except by incompetent persons, or by those who are fearful and superstitious, and do not like to depart from the ways of their forefathers.

§ A tourniquet is useful when loosely applied after an operation, and the attendant should be taught how to turn it, so as to suppress any serious bleeding which may take place until the surgeon can be procured. It may be, although it rarely is, necessary on the field of battle. The surgeon need not, therefore, load himself or his assistant, as formerly with a sackful, for a thoroughly useful tourniquet can be made in a moment with a pebble and a pocket-handkerchief, or a roller. The great point is to know where and how to apply it.

If after a fracture in course of treatment, the principal artery should be wounded by some accidental motion of the bone, amputation should in general be resorted to. A ligature on the artery higher up would fail, and the operation of seeking for both ends of the injured vessel would cause so much mischief in an unsound part, that the consequences would in all probability be fatal.

§ When the femur is suffering from a malignant disease, commencing in the periosteum, or its cancellated internal structure, I am reluctantly obliged to say that the removal of the whole bone at the hip-joint offers the best, perhaps the only, chance of success. In such cases, the operator has in general the power of selecting his mode of proceeding.

It may be laid down as a principle in all cases of accident, whether from shot, shell, or railway-carriages, that no man should suffer amputation at the hip-joint when the thigh-bone is entire. It should never be done in cases of injury when the bone can be sawn immediately below the trochanter major, and sufficient flaps can be preserved to close the wound thus made. An injury warranting this operation should extend to the neck or head of the bone, and it may be possible, as I have proposed, even then to avoid it by removing the broken parts.

§ The principle being established, as a general rule, in all cases of recent injury, that the femur must be broken at least as high as the trochanter to constitute an imperative case for this operation, the next point of importance relates to the manner of forming the first incisions. The instructions and recommendations to be found in the performance of this operation are frequently inapplicable, and are not to be depended upon; the errors occurring from the operation have been considered and performed on the dead body and not on the living, on the normal and not on the injured state of parts. Thus, for instance, it is recommended that an assistant should rotate the knee outwards or inwards, to show the head of the femur: to which recommendation there is the insuperable objection, that no person should suffer this operation who has a knee, or half a thigh, or even a third of one, to move by the rotary process. Pure theorists in surgery have decided upon having a large flap made on the fore part of the thigh, and a smaller one behind, regardless of the fact that this cannot be done in many cases requiring a primary operation from the nature of the injury, although it may be done in many secondary cases, in which this severe operation would not have been required if the limb had been amputated in the first instance. It is the mode recommended by Mr. Brownrigg, who in his operations, which were secondary ones, had a choice of integument, and is perhaps, under those circumstances, the best.

The Baron Larrey tied the femoral artery in the first instance, and then made two lateral flaps; but this operation, dependent on the fear of hemorrhage, was never performed in the British army.

§ My first successful operation, performed in 1815, was done from without

inwards, the flaps being anterior and posterior, the artery being compressed against the pubes.

The patient is to be laid on a low table, or other convenient thing, in a horizontal position; an assistant standing behind and leaning over, compresses the external iliac artery, becoming femoral as it passes over the edge of the pubes. The surgeon, standing on the inside, commences his first incision some three or four inches directly below the anterior spinous process of the ilium, carries it across the thigh through the integuments, inwards and backwards, in an oblique direction, at an equal distance from the tuberosity of the ischium to nearly opposite to the spot where the incision commenced; the end of this incision is then to be carried upwards with a gentle curve behind the trochanter, until it meets with the commencement of the first; the second incision being about or rather less than one-third the length of the first. The integuments, including the fascia, being retracted, the three glutæal muscles are to be cut through to the bone. The knife being then placed close to the retracted integuments, cuts steadily through everything on the anterior part and inside of the thigh. The femoral or other large artery may then be drawn out by a tenaculum or spring-forceps, and tied. The capsular ligament being well opened, and the ligamentum teres divided, the knife should be passed behind the head of the bone thus dislocated, and made to cut its way out, care being taken not to have too large a quantity of muscle on the under part, or the integuments will not cover the wound, under which circumstance a sufficient portion of muscular fibre must be cut away. The obturator, glutæal, and ischiatic arteries are not to be feared, being each readily compressed by a finger until they can be duly secured. The capsular ligament, and as much of the ligamentous edge of the acetabulum as can be readily cut off, should be removed. The nerves, if long, are to be cut short. The wound is then to be carefully cleaned, and brought together by three or more soft leaden sutures in a line from the spine of the ilium towards the tuberosity of the ischium. The ligatures are to be brought out between the sutures and the adhesive strips of plaster assisting them; a little wet lint is to be placed over the wound, and some well-adapted compress under the lower flap; the whole to be retained by a soft bandage. In my successful case there was a shot-hole in the under-flap, which did good service; and from seeing its use, I have no objection to a small perpendicular slit being made in the lower flap, and a strip of linen introduced to prevent adhesion, as the immediate union of the flaps cannot be expected, nor is it often to be desired.

This mode of proceeding is more certain of making good flaps where integuments are scarce. Where the integuments will admit of the anterior flaps being made by the sharp-pointed puncturing knife dividing the parts after it has been passed across from within outwards, there is no objection, and it may be preferred. I have had two added to each of the cases of instruments supplied to the army for the purpose.

Professor Langenbeck, when lately in London, informed me he had performed amputation at the hip-joint, in the Holstein war, several times, and he believed more than once successfully, making the anterior flap by the pointed knife, cutting from within outwards, but the posterior one by cutting through the integuments from without inwards, as I have recommended, in order to make it of a more equal and proper thickness. One point to be attended to is to leave as little as possible of the internal tendinous structure of the great glutæus muscle, which does not readily unite with other parts; a second, not to leave too much muscle behind; and a third, to remove as much as possible of the ligamentous structure about the joint. The after treatment will be the same as in other formidable cases. The shock, however, of the injury, and of the amputation, will rarely render blood-letting necessary. Cordials, in small quantities, with opiates and a light nourishing diet, should be given. The wound should be wetted with cold water, and the patient constantly watched.

Mr. Brownrigg's operation is to be done in the following manner:—The patient is to be placed on a low table and properly secured, with the nates projecting over its edge, the artery being compressed; the surgeon enters the pointed knife between the spine of the ilium and the trochanter major, and carries it across the thigh, as near as may be to the head and neck of the femur, until the point appears on the inside, near the scrotum, which should have previously been drawn

away. The knife is to cut slowly downwards, to make a flap, under which, and behind the knife, an assistant inserts his four fingers, in order to be able to grasp the flap and aid in compressing the principal artery, as the operator completes the flap, which it is intended should be a large one.

The assistant holding up the flap, the surgeon cuts through the attachment of the glutæus medius muscle, if it has not been done, opens the capsular ligament of the joint, and cuts through the ligamentum teres. The head of the bone can now be readily withdrawn from the acetabulum. The knife is then to be placed behind the head of the bone and the trochanter, and carried obliquely downwards and backwards, so as to form a shorter flap behind than has been made before.

Amputation by the circular incision is to be done in the following manner:—When a tourniquet is used, the pad should be firm and narrow, and carefully held directly over the artery, while the ends of the bandage in which it is contained are pinned together. The strap of the tourniquet is then to be put round the limb, the instrument itself being directly over the pad, with the screw entirely free; the strap is then to be drawn tight, and buckled on the outside, so as to prevent its slipping, and yet not interfering with the screw. Should the screw require to be turned more than half its number of its turns, the strap is not sufficiently tight, or the pad has not been well applied. The patient being placed on a table at a convenient height, the assistants are carefully to retract the integuments upwards, and put them on the stretch downwards, by which means their division is more easily and regularly accomplished. The surgeon, standing on the outside, passes his hand under the thigh, and round above quite to the outside, and there he begins his incision with the heel of the knife, and with a quick, steady movement, carries it round the thigh until the circular division of the skin, cellular membrane, and fascia is completed. The skin cannot be sufficiently retracted unless the fascia be divided, and as the division of the skin is certainly the most painful part of the operation, it ought never to be done by two incisions, when the largest thigh can most readily and speedily be encircled by one. If the fascia should not be completely divided by the first circular incision, it is to be cut with the point of the knife, together with any attachment to the bone or muscles beneath. The amputating knife is then to be applied close to the retracted fascia and integuments, and the outermost muscles are to be divided by a circular incision, with any portion of the fascia that may not have equally retracted. This incision completed, the knife is immediately to be placed close to the edge of the muscular fibres which have retracted, and the remainder of the soft parts divided to the bone in the same manner. In making these two incisions, care should be taken to cut at least half an inch on each side of the great artery by one incision, which should be either the first or second, as may be most convenient. The muscles attached to the bone are to be then separated with a scalpel for about three inches in large thighs, by which means the bone will be fairly imbedded when sawed off. The common linen retractor is now to be placed on the limb, and the muscles steadily kept back while the bone is sawed through. The periosteum is to be divided by one circular cut of the scalpel, after the retractor is put on. The heel of the saw is then to be applied, and drawn towards the surgeon so as to mark the bone, in which furrow he will continue to cut with long and steady strokes, the point of the saw slanting downwards in a perpendicular direction until the bone be nearly divided, when the saw is to be more lightly pressed upon to avoid splintering it, which this manner of sawing will also tend to prevent. During the operation the thigh should be held steadily above, and in such a manner below that the part to be cut off does not weigh or drag on the bone above; at the same time it must not be pressed inwards or upwards, or it will prevent the motion of the saw, or splinter the bone. The retractor being removed, the great artery is to be pulled out by a tenaculum passed through its sides, separated a little from its attachment, and firmly tied with a two-threaded strong ligature, provided the dentists' silk is not used, and the tenaculum is not to be withdrawn until this is accomplished; any other vessels that show themselves may be secured, and compression should for an instant be taken off the main artery, when others will start. If used, the tourniquet should now be removed, and the small remaining vessels will be discovered. If the great vein continue to bleed after some pressure has been made upon it, a single-

threaded ligature should be put over it; but this should not be done if it can be avoided, and only when the loss of a little blood might be dangerous. If the cancellated part of the bone should bleed freely, the thumb of the left hand pressed steadily upon it, whilst the vessels are tying, will in a short time suppress it. Any inequality of bone should be removed by forceps. The ligatures should now be shortened, one end of each thread being cut off; the stump is to be sponged with cold water and dried; the bandage rolled steadily down the thigh; the muscles and integuments brought forward and placed in apposition, horizontally, across the face of the stump, and retained by leaden sutures and adhesive plasters carefully applied, from below upwards, and from above downwards; the ligatures being brought out nearly as straight as possible, in two or three places between the slips of plaster, unless both ends have been cut short. A compress of lint is to be placed over and under the wound, supported by two slips of bandage in the form of a Maltese cross, vertically and horizontally, and the whole secured by a few more turns of the bandage. No stump-cap is to be applied; the stump is to be raised a little on a proper pillow from the bed, in which the patient lies on his back; and if the bone appears to press too much against the upper flap, the body may be a little raised, which will relieve it.

In secondary amputation of the thigh, the integuments may not be sound, and will not retract, in which case they must be dissected back to an equal distance all round. If the muscles are much diminished in size, or flabby, they should be left even longer than may appear necessary for the formation of a good stump; and this is to be done more especially on the under part, for the bone will frequently protrude under these circumstances, when enough has been supposed to have been preserved. In all these cases the bone should be shorter than usual, and the skin should, if possible, retain its attachments to the parts beneath. No inconvenience can ever arise from too much muscle and skin in a circular stump; but it does sometimes from too much skin alone.

In primary operations there will be from three to seven vessels to be tied; in secondary ones, from ten to sixteen, and even then there may be an oozing from the stump. In this case a little delay in searching for the vessels is necessary; the tourniquet and all tight bandages should be removed, and the stump well sponged with cold water before it is dressed. A certain degree of oozing is to be expected from all stumps, although it does not always occur; but when there is really any hemorrhage, so that blood distils freely through the dressings, the stump should be opened, when the bleeding vessel will generally be discovered readily, though not visible before. A stump under these circumstances should not be closed in the first instance; the parts should be merely approximated until all bleeding has ceased.

When the operation is performed near the knee, the gradual thickening of the thigh prevents the retraction of the integuments, and has an effect upon the vessels of the stump; both of which evils are avoided after the circular incision is completed, by making a cut, of an inch and a half in length, in the integuments through the fascia on each side, in the horizontal direction in which they are recommended to be placed, after the operation is finished; but this will very rarely be necessary.

Amputation of the thigh, by the flap operation, is best accomplished by the method adopted by Mr. Luke, of the London Hospital, and which is as follows:—The patient being placed so that the thigh projects beyond the table, the surgeon stands with his left hand towards the body, or on the outside, when amputating the right, and on the inside, when amputating the left, thigh. The knife to be used ought to be narrow, pointed, and longer by two or three inches than the diameter of the thigh at the place of amputation. The point of the knife should be entered mid-distance between the anterior and posterior surfaces of the thigh, which may be effected with accuracy, if the eye is brought to a level with the thigh, when the middle point is easily determined. The posterior flap is to be formed first, by carrying the knife transversely through the thigh, so that its point shall come out on the opposite side, exactly midway between the anterior and posterior surfaces. In traversing the thigh, the knife should pass behind the bone, and will be more or less remote from it in different individuals, according to the greater or less development of the posterior muscles, when, by cutting obliquely downwards, to the extent of from four to six inches, according to the thickness of

the thigh, a posterior flap is formed. The anterior flap is effected, not by making a flap, but by commencing an incision through the integuments and muscles on the opposite side of the thigh to the surgeon, and at a little distance anterior to the extremity of the posterior flap. This incision is made from without inwards, through the integuments, so as to form an even curve, and without angular irregularity over the thigh, to near the base of the posterior flap on the side on which the surgeon stands. The length of this flap is determined by that of the posterior. It will, therefore, vary from four to six inches, as before stated; and for its completion, will require a second or perhaps a third application of the knife. In the two flaps thus made, the division of almost all the soft structures is included, a few only immediately surrounding the bone remaining uncut. These are to be divided by a circular sweep of the knife, at the part where it is intended to saw the bone; and in this way it is sufficiently denuded for the application of the saw. The flaps being held back by an assistant, the bone is to be sawn through in the usual way. In amputations of the lower part of the thigh it usually happens that the ischiatic nerve lies upon the surface of the posterior flap, and should be removed. It occasionally occurs, although not frequently, that the popliteal artery, at its commencement, is cut obliquely; but in amputations above the passage of the arterial trunk, through the tendon of the triceps, this does not take place, the division of the artery being usually included in the circular sweep made after the formation of the flap. The divided arteries being carefully secured, the flaps are to be brought together and retained by three sutures passed through the integuments, at equal distances from each other, and from the extremity or base of the flaps. It appears to be a matter of considerable importance not only that their edges should be kept in apposition, but that their *whole surfaces* should be kept in accurate contact. For this purpose, the following method of dressing is adopted:—The edges, in the intervals between the sutures, are to be held together by strips of adhesive plaster about one inch in breadth. A compress of lint is then to be fitted over each flap—that upon the posterior flap being the larger. The compresses are to cover the flaps only, and not to extend over the extremity of the bone, where their pressure would probably be ill endured. The posterior compress is made large, that it may serve as a cushion on which the thigh rests when the patient is placed in bed. The compresses are to be retained in position by one or two strips of plaster, and supported by a bandage applied carefully round the stump. If this be properly accomplished, the whole surfaces of the flaps are kept accurately in contact with each other, and complete union may be reasonably expected. By securing the perfect apposition and support of the entire surfaces in accurate contact, the disposition to the issue of blood from small vessels is also obviated to a great extent; and it is even probable that vessels of a larger diameter than the smallest, which would bleed, if not restrained, are, by the pressure of the opposing surface, prevented from doing so, and the probability of secondary hemorrhage is diminished. Experience has demonstrated the fact, that primary union of the flaps is most effectually secured in the great majority of amputations thus treated. Indeed, non-union of the flaps is the exception—union, the rule. In the subsequent treatment of the stump, care must be taken to prevent accumulation of discharge in the tracts of the ligatures; and the dressings must be renewed according to circumstances having reference to the quantity of discharge, and the uneasiness of the patient. The line of division of the integuments of the two flaps is situated, at first, in the centre of the face of the stump; but when the flaps have united, a gradual change takes place in the position of the cicatrix: it recedes, by degrees, to the posterior aspect of the thigh, and the bone abuts upon the anterior flap, by which alone it is eventually covered, and the cicatrix is thus removed from its pressure.

A protrusion of bone is a disagreeable occurrence after amputation; it will sometimes happen after sloughing of the stump, without any fault in the operator. If, on completing the operation, it is evident the bone cannot be well covered, a sufficient portion should be at once sawn off, and the error remedied.

When the bone protrudes at a subsequent period to the extent of an inch or more, it should be removed by operation, an incision being made on, and down to, the bone, and the saw applied where it is sound. The chain-saw when at hand, answers well, and some should be supplied for the use of the principal hospitals

with every array. The protruded end of bone should be held steadily by pincers, or it may be introduced into a hollow tube, which fixes it firmly.

When the bone is badly sawn through, or split in the act of dividing the last layer, or the periosteum is unduly separated, the end will often exfoliate with the split, which may extend up for three or more inches, causing much suffering, and occupying a great length of time before the stump becomes quite sound. A splinter of this kind may even require to be removed at a late or even distant period, from the nervous irritation and suffering it may occasion.—*Lancet, June* 12, 1852, *p.* 555.

§ Wounds of the knee-joint, with fracture of the bones composing it, from musket-balls, require immediate amputation; for although a limb may be sometimes saved, it cannot be called a recovery, or a successful result, where the limb is useless, and is a constant source of irritation and distress after several months of acute suffering have been endured, to obtain even this partial relief from impending death. For one limb thus saved, ten lives will be lost; and the sufferer is often glad, after months and years, to lose the limb thus saved, more particularly when the ball has lodged in the articulating surfaces of either of the bones. Amputation at a secondary period, in these cases, does not afford half the chance of success, for many will not outlive the inflammation and the fever which ensue. The amputation should therefore be immediate, unless excision can be substituted for it.

§ Compound fractures of the patella, without injury of the other bones, admit of delay, provided the bone is not much splintered. If the ball should have pierced the centre of the patella, and passed out in nearly an opposite direction behind, the limb will not be saved. If the ball have struck the patella on its edge, and gone through it transversely, opening into the joint, it will very rarely be saved; but if it be merely fractured, there is hope under the most rigorous antiphlogistic treatment, and delay is proper. A ball will occasionally penetrate the capsular ligament, and lodge in the knee-joint, without fracturing the bone; if it cannot be extracted without opening extensively into the cavity of the joint, and the extraction of the ball is absolutely necessary, amputation had better be performed at first, for it will be ultimately necessary. The condyles of the femur and the lower part of the bone being spongy, a ball may pass through them or between them, and fall into the knee-joint, or it may make a prominence on the side of the patella, without passing out, or immediately interrupting the motion of the leg, for the soldier may walk some distance afterwards. The popliteal artery may also be divided in addition, and either of these cases will render amputation necessary; for the ball must be taken out on the forepart, and the general inflammation of the joint will either destroy the patient in a short time, or, after much distress and hazard, leave him no alternative but amputation. If a ball lodge in the condyles of the femur, within the capsular ligament, and cannot be easily extracted, amputation is advisable; for the limb, if preserved, will not be a useful one. If the ball, on the other hand, lodge without the capsular ligament, and cannot be readily extracted, the wound should be healed as soon as possible; and although it may cause some little inconvenience to the knee-joint, the limb and life of the patient may be saved, as I have seen in many instances, when a continuance of persevering efforts to extract it would have exposed both to great danger. Many cases of wounds of the knee-joint, in which the capsular ligament is wounded, and the articulation opened into without injury to the bones, do well, such as simple incised wounds made with a clean cutting instrument. The success attending all wounds of the knee-joint depends entirely upon the antiphlogistic mode of treatment being rigidly enforced, and to a very great extent. The limb is to be placed in the straight position, a splint is to be put underneath it, in order to prevent any motion, and cold or iced water is to be applied, especially in summer, to diminish the increasing heat. General bleeding may be had recourse to in sufficient quantity to keep all general inflammatory action in due bounds; but, it is on local blood-letting that the surgeon must principally rely for the prevention of inflammation. Cupping can sometimes be performed with marked effect; but leeches are more serviceable when they can be procured in sufficient numbers; from twenty to forty, or more, may be applied at a time; and whenever the sensation of heat is felt, and is accompanied by pain, they should be repeated

until these symptoms subside. The necessity for the local abstraction of blood is so great, that it should never be lost sight of for a moment; for if suppuration take place throughout the cavity of the joint, it is followed, in most instances, by ulceration of the cartilages and caries of the bones. By local and general bleeding, the application of cold, rigid abstinence, and the straight position, a recovery may sometimes be effected; but wounds of the knee-joint, however simple, should always be considered of a very dangerous nature, infinitely more so than of the shoulder, the elbow, or the ankle. When a poultice is applied to a gun-shot wound of this kind, I consider it the precursor of amputation. Colonel Donnellan, of the 48th Regiment, was wounded, at the battle of Talavera, in the knee-joint, by a musket-ball, which gave him so little uneasiness that he could scarcely be persuaded to proceed to the rear. At a little distance from the fire of the enemy, we talked over the affairs of the moment, when, tossing his leg about on his saddle, he declared he felt no inconvenience from the wound, and would go back, as he saw his corps was very much exposed. After he had staid with me a couple of hours, I persuaded him to go into the town. This injury, although at first to all appearance so trifling, proceeded so rapidly as to prevent any relief at last being obtained from amputation, and caused his death in a few days.

§ *Excision* of the knee-joint is an operation attended, until lately, with so little success, that it has been rarely performed. It is probable that the result may be more favourable in cases of injury in which the femur and tibia have both been so much injured by a musket-ball, without doing much mischief to the soft parts, as would have rendered amputation necessary. In such cases, provided every accommodation, and particularly absolute rest, can be obtained for the sufferer, excision should be attempted, in preference to the amputation recommended in the two preceding sections. Three cases of success have lately been published by Mr. Jones, of the island of Jersey; and his method of operation is here transcribed. as sent to me by himself.

"In my first case, the incisions were in this form, H, two lateral along each side of the joint, and a transverse one immediately over the middle of the patella. The flaps were then dissected upwards and downwards, the patella removed (and I do not see any advantage can be gained by keeping it, even if not diseased); the crucial and lateral ligaments were then divided, and the joint completely opened. The leg was afterwards bent backwards on the thigh, and the diseased portion of the femur was cleared, and removed with an ordinary amputating saw. The same method was followed with the tibia; the bones placed in juxta-position, the flaps brought together by means of a few stitches, and the limb placed in a species of fracture-box. Water-dressing was applied. In the second case, I followed very nearly the same plan, with the exception of my first incisions, which were made something in a horse-shoe shape. In the third case, I removed a considerable portion of integument, and, I conceive, with marked advantage. In the two former cases, I think the cure was protracted by preserving all the diseased external parts."

§ Amputation of the leg is performed in two ways—by the circular incision, and by two flaps, circular incision being only applicable to the calf. In either way the stump should, if possible, be seven inches long, for the more convenient application of an artificial leg, which is now made with a socket to fit the stump, instead of resting against the bent knee, unless the stump is too short for its proper adaptation otherwise.

The operation by the circular incision is performed in the thick part of the leg, and the bone is usually sawn through about four inches from the patella, that, when the stump is healed, there may be sufficient length of bone left to support with steadiness the weight of the body, and that greater facility may be given to the motion of the leg, from the preservation of the insertions of the flexor tendons. The most eligible place for the application of the tourniquet, when used, is about one-third of the length of the thigh from the knee, on the inside, where the artery perforates the tendon of the triceps muscle, and where it can be most compressed against the bone by a small firm pad, the instrument being on the outside, or opposite the pad; or the compress may be placed between the hamstring tendons, a little distance from the hollow behind the joint, the instrument itself being on the fore part of the thigh. In this method the pad must be thicker, and the com-

pression is more painful, and not more secure. The surgeon should stand on the inside of the leg to be operated upon, that he may more readily saw the fibula at the same time as the tibia, by which the chance of splintering the fibula is diminished; for this bone is held much more steadily under the saw when the tibia is undivided, whatever pains may otherwise be taken by the assistants to secure it. The limb should be a little bent, and the circular incision made with the smaller amputating knife through the skin and integuments to the bone, on the fore part, and to the muscles on the outside and back part; and as the attachment of the skin to the bone will not readily allow of its retraction, it must be dissected back all round, and separated from the fascia, the division of which, in the first incision, would avail nothing, from its strong attachments to the parts beneath. The muscles are then to be cut through nearly on a level with the first incision, and down to the bones. The inter-osseous ligament between the tibia and fibula is to be divided with the catling; and as several of the muscles cannot retract, in consequence of their attachments to the bones, they are to be separated with the knife; and in the same manner, the inter-muscular septa, or expansions running between them, are to be divided, as they will still prevent their retraction. The retractor with three slips is now to be put on, the centre slip running between the bones, by which the soft parts may be pulled back to a sufficient distance, any adhering part being divided by the point of the knife. The bones are to be sawed through with the usual precautions, and the retractor removed, when the three principal arteries should be secured: the anterior tibial, on the fore-part of the inter-osseous ligament, between the tibia and fibula; the perineal artery behind the fibula; and the posterior tibial near it, more inwards and behind the tibia; this artery will frequently, however, contract very much, and only shows itself on the compression being taken off the artery above. It in general causes more trouble to secure it than the others, and I have two or three times seen, even in London hospitals, the needle dipped around it in despair, when merely pulling out the artery with the tenaculum, and dissecting a little around it, would have shown the small retracted bleeding vessels arising from it, and have prevented, in all probability, a secondary hemorrhage. The tourniquet, if used, being removed, the smaller vessels tied, and the stump sponged with cold water, and dried, the integuments and muscles should be brought forward as much as possible, and the straps of adhesive plaster applied from side to side—that is, the wound is to be closed vertically or nearly so, that the straps of plaster may not in any way press upon the fore-part of the tibia, by which the protrusion of it will be avoided—an occurrence which almost invariably follows when the line of approximation is horizontal, and the strips of plaster press upon the bone. If the spine of the tibia be sharp, it should be removed by the saw, whether the operation be done by the circular incision or by flaps.

ϕ The flap operation, as performed by Mr. Luke, differs from that of the thigh in some particulars. There is a greater variety in the proportion which the soft parts in the posterior flap bear to those in the anterior flap; and the distance from the bones at which the limb is transfixed in the first step of the operation is subject to such variety, that in the large calf the mid-point for the introduction of the knife lies at some distance from the posterior aspect of the bones; in the small calf it is close to it. The course of the knife through the limb is oblique, instead of transverse, for the purpose of accommodating the line of incision to the plane of the two bones. The anterior flap is formed in the same way as in the thigh amputation, but it has proportionately more integuments and is thinner; yet its base and length are rendered equal to the base and length of the posterior flap, and may be adjusted evenly with it when the stump is dressed. In the circular division of the remaining soft parts, after the formation of the flaps, there is a necessary variation in the proceedings, from the circumstance of there being two bones united by inter-osseous membrane. It may, however, be accomplished by sweeping the knife around the more distant bone of the two, its point being afterwards carried between the bones through the inter-osseous membrane. While the knife is between the bones its edge may be so turned that the membrane may be divided longitudinally to any convenient extent, for the easy introduction of a retractor, and the soft parts around the bone nearest to the operator may subsequently be divided by a sweep of the knife, in a manner similar to that adopted for the division

of parts around the more distant bone. The sawing of the bones and dressing of the stump are accomplished as in the thigh amputation, but more care is required to avoid pressure on the acute margin of the tibia, which, when very sharp, should be removed, and to prevent the pendulous state of the flaps.

When the nature of the injury renders amputation necessary at or immediately below the tuberosity of the tibia, the operation may be done with safety. Baron Larrey recommended the removal of the head of the fibula in such cases, which I have done with impunity, and made thereby a better stump than if it had not been done; but as the articulating surface of the head of the tibia does sometimes enter into the composition of the knee-joint, and this cannot be known beforehand, the removal of this portion of the fibula is not advisable, neither must the tibia be sawn above the tuberosity, lest the capsular ligament be implicated. As an operation by which the knee-joint is saved, it is important, for although the stump is very short, it forms a solid support for the body, and enables the patient to walk without the aid of a stick, and admits of the adaptation of an artificial leg. The skin, in these cases, must be saved, in every direction, by flaps, to form a covering. When in sufficient quantity, the operation may be done by the circular incision, as much muscle as possible being saved, to aid in forming a covering on the under and outer sides. The posterior tibial artery will be found to have retracted behind the head of the bone, from whence it, or others which may bleed, must be drawn out. The nerves must be cut as short as possible.

Excision of the Ankle-joint.—§ This operation should be performed in the following manner:—Begin the incision behind the external malleolus, an inch and a half above its lower extremity, and carry it downwards and then forwards across the front of the ankle-joint, then under the internal malleolus and upwards, close behind this process, to the extent of an inch and a half; this incision should merely divide the skin, and should not, on any account, wound the subjacent parts. Raise the flap thus made, and, placing the leg on its inside, detach and turn aside the peronei tendons from the groove behind the external malleolus. Cut through the external lateral ligaments of the ankle-joint, keeping the knife close to the malleolus; then with the large bone-scissors, or nippers, cut through the fibula from one half to three quarters of an inch above its junction with the tibia, and dividing the ligamentous fibres connecting the two bones, remove the malleolus externus. Turn the leg on to its outer side, and cut through the internal lateral ligament close to the tibia, to avoid wounding the posterior tibial artery; this will allow the foot to be dislocated outwards, and the lower end of the tibia to be brought well out through the wound. An assistant keeping the foot and tendons out of the way, the lower end of the tibia is to be removed by a fine saw to the same extent as the fibula, or as high as the injury or disease requires. The articulating surface, or injured part, of the astragalus, is then to be removed, after which the foot is to be returned to its proper position, and the cut surfaces of the tibia and astragalus brought into and kept in close approximation by suture, strapping, and bandage. The limb is to be placed on an outside leg-splint, having a foot-piece to it; and in order to prevent any matter oozing, an opening should be maintained on the outside of the joint, with a corresponding hole in the dressing and splint, for this purpose, until the recovery is completed. The shot-hole will sometimes answer the purpose when the injury is inflicted by a musket-ball. There are no vessels to tie unless wounded accidentally.

Removal of the Os Calcis.—§ If this bone should be much shattered, and the injury nearly confined to it alone, it may be removed in the following manner. Make a semilunar incision down to the bone from the posterior angle of the inner malleolus, across the sole of the foot to the external malleolus, the convexity of the flap being forwards. This flap being turned back, the tendo-Achillis is brought into view, and is to be separated from its attachment, or cut across above it. The point of junction between the calcis and astragalus being ascertained, the ligamentous fibres are to be cut through, and the joint between them opened, when the knife is to be carried from behind forwards, in order to divide the inter-osseous ligament between them. Some ligamentous fibres passing between the calcis and cuboid bones are then to be cut through, when the os calcis may be dissected out without difficulty. The posterior tibial artery and nerve will be divided.

This bone was first removed for disease of its substance by Mr. Hancock, and has been done several times since by Mr. Greenhow and others, with success.

§ When the bones of the leg are not injured, although those of the tarsus are so far destroyed as to render amputation necessary, the operation introduced by Mr. Syme for removing the foot at the ankle-joint, will be well adapted for this injury, provided the soft parts have not been so much destroyed as to prevent the formation of a covering flap or flaps. His directions are,—

"The best instrument for performing the operation is a large bistoury, or small amputating knife, with a blade about four inches long. There is no occasion for a tourniquet, as the assistant has complete command of the vessels by grasping the ankle. In my first operation, the flap was made unnecessarily long; and I feel confident that the following directions may be trusted for exactly determining its proper extent. The incisions across the instep and sole of the foot should be curved, with the convexity forwards, and exactly opposite each other. A line drawn round the foot, midway between the head of the fifth metatarsal bone and the malleolus externus, will show their extent anteriorly, and they should meet a little way farther back, opposite the malleolar projections of the tibia and fibula. Care should be taken to avoid cutting the posterior tibial artery before it divides into the plantar branches, as, in the two cases where I did so, there was partial sloughing of the flap. If the ankle-joint is sound, the malleolar processes should be removed with the cutting-pliers; but if the articulating surfaces of the tibia and fibula be diseased, a thin slice of these bones should be sawn off. The edges of the wound should be stitched together, and lightly dressed. When the cure is completed, the stump is of a conical form, and having for its apex, or central point of pressure, the thick integument which covered the heel, to which a particular kind of shoe must be adapted, with which the sufferer can walk much better than could have been previously expected."

This operation has not answered, in some of the hospitals in London, the expectations entertained of it from its success in Edinburgh, the flap formed from the under part, or heel, having frequently sloughed. This, Mr. Syme declares, is the fault of the operators, and not of the operation, sufficient attention not having been paid to preserve the posterior tibial artery intact, until it has divided into its plantar branches; and he insists, with reason, that the operation should be done exactly as he has described it. It is an operation more likely to be eminently successful in military than in domestic surgery, from the parts being sound in the former, with the exception of the injury for which it is performed.

Domestic Surgery, or that of civil life, has in these operations of excision of the ankle-joint, and of amputation at that part, repaid her Amazonian sister of military warfare for the improvements she has introduced into the great art and science of surgery; and a degree of generous emulation will be excited and maintained between them, which, it may be believed, will, in the event of a European war, add much to its scientific and preservative character.

§ A musket-ball will seldom pass through the foot without injuring a joint of some kind, or wounding a tendon or nerve; and the injury to the fascia, which is very strong on the sole of the foot, and frequently covered by much thickened integument, is always attended with inconvenience. The extraction of balls, of splinters of bone, of pieces of cloth, and the discharge of matter, become more difficult, and often cause so much disease as ultimately to render amputation of the foot necessary. Tetanus is a frequent consequence of these injuries, and is a disease, in its *acute* form, certainly remediable by no operation or medicine at present known. Amputation has always failed in my hands, although it was strongly recommended by the Baron Larrey. The operative surgery of the foot should be done as soon after the injury as it can be conveniently accomplished, for a large, clean, incised wound is a safe one, compared with a torn surface and splintered bone, with extraneous substances, of much less extent; and as a ball lodged in the foot is always very dangerous, great attention should be paid in the examination of even slight wounds. A cannon-shot can seldom strike the foot without destroying it altogether; it may, however, strike the heel, and destroy a considerable part of the os calcis, without rendering amputation necessary, if the ankle joint be untouched; for by due attention in removing the spicula

of bone at first, and by making free openings for the discharge of matter in every direction in which it may appear inclined to insinuate itself, the limb may be preserved in a useful shape.

§ Wounds from cannon-shot injuring the fore part of the foot are better remedied by amputation at the joints of the tarsus with the metatarsus, than by sawing these bones across; but when the injury affects only one or two toes, they may be removed separately, recollecting that it is of greater importance to preserve the great toe than any other, and this toe is worth preserving alone, when any of the others would be rather troublesome than useful. Musket-balls seldom commit so much injury as to require amputation as a primary operation, although they frequently render it necessary as a secondary one. The splinters of bone are to be removed, the ball and extraneous substances are, if possible, to be taken out; and if the bones, tendons, and blood-vessels are so much injured as to render the attempt to preserve them useless, amputation is to be performed; but if the preservation of the limb be thought practicable—and it generally will be so in wounds from musket-balls—the attempt must be made under the most rigid antiphlogistic treatment, the local application of leeches and cold water from the first, and with free openings for the subsequent discharge. Musket-balls seldom injure the metatarsal bones so as to require their removal with their toes, and under the treatment above-mentioned, these wounds will in general be healed without further operation. Wounds from grape-shot occasionally render the removal of the metatarsal bone of the great toe at the tarsus necessary, although much should be done to save it. The little and adjacent toes are also sometimes removed at the tarsus, the middle ones but seldom, as it is not an easy operation to perform, in consequence of the naturally close attachment of these bones, and the additional compactness they have acquired from the pressure of the shoe. Hæmorrhage from the arteries of the foot authorizes in a very slight degree amputation, even when superadded to other causes; for the incisions necessary to secure the bleeding vessels will not, in general, add much to the original injury unless they are very extensive; on the contrary, they will render the wound less complicated and more manageable.

§ Amputation at the tarsus, when it is proposed to save the flap from the under part of the foot, is performed in the following manner:—The joints of the metatarsus with the tarsus, being well ascertained, an incision is to be made across the foot, in the direction of the joints, but from half to three-quarters of an inch nearer the toes, and the integuments drawn back over the tarsus From the extremities of this incision, two others are to be made along the sides of the great and little toe, for about two inches and a half, according to the thickness of the foot; and the ends of these two incisions are to be united by a transverse one down to the bone, on the sole of the foot, the corners being rounded off. The flap thus formed on the under part is to be dissected back from the metatarsal bones, including as much of the muscular parts as possible, as far as the under part of the joints of the tarsus. The metatarsal bones are now to be removed by cutting into and dislocating each joint from the side, commencing on the outside, by placing the edge of the knife immediately above, but close to the projection made by the posterior part of the metatarsal bone supporting the little toe, which prominence is always readily perceived. The arteries are to be secured; any long tendons and loose capsular ligament are to be removed with the knife or scissors, and the under flap, formed from the sole of the foot, is to be raised up so as to make a neat stump, when brought in contact with the upper portion of integuments that were first turned back; the whole to be retained in this position by sutures, adhesive plaster, and bandage. When the skin of the under part of the foot is much torn, which is not uncommon in a wound made by a fragment of a shell, the flap cannot be formed from it; in this case it must in great measure be saved from the upper part; but the integuments being here so much thinner, the flap is not so good a defence against external violence, and will be more readily affected by cold. The metatarsal bones may be sawn across in a straight line, in preference to removing them at the joint; and although the whole may be sawn across at once with more ease than any one of them individually, except the outer ones, yet the stump is never so much protected from external violence as when the operation is performed at the joint of the tarsus.

§ Amputation of the foot, leaving the astragalus and calcis, may, in certain cases of injury anterior to these bones, be performed with advantage, care being taken to make the under flap so large that the line of cicatrization may be on the upper and anterior edge of the stump, rather than transversely across the face of it, in order to render it firmer and better able to resist and sustain any pressure which may be applied to it.

The limb being placed on the table, and held by an assistant, the surgeon ascertains the situation of the joint formed by the junction of the astragalus with the scaphoides, which will be indicated by the prominence on the inside of the tarsus, discoverable by passing the finger forwards from the malleolus internus towards the side of the great toe. The joint of the os cuboides with the os calcis on the outside, is always to be found about half an inch behind the projection formed by the posterior part of the metatarsal bone of the little toe. The under part of the foot being firmly held in the palm of the surgeon's hand, he places the point of the thumb on the external joint, and that of the fore-finger over the internal one, which indicate a transverse oblique line, for the first incision, and which should commence near the thumb, and be continued with a semilunar sweep, the convexity towards the toes, until it terminates at the side of the foot where the fore-finger was placed. The joint between the astragalus and scaphoides is now to be opened, by directing the knife from within obliquely outwards towards the projection of the metatarsal bone of the little toe. These bones are then to be dislocated by pressure, and the ligaments retaining them divided. The joint between the os cuboides and the os calcis is now to be opened from without inwards, and the bones dislocated. The strong inter-articular ligament being cut, and the joint largely opened, the knife is to be passed between the under surfaces of the scaphoides and cuboides, and the soft parts adhering to them, and cut from behind forwards a flap sufficiently large to cover the wound, which is then dressed in the usual manner.

§ Mr. Wakley, jun., has lately performed a successful operation for the removal of the astragalus and os calcis, deserving of imitation in peculiar cases. A description of the operation is given in a report by Mr. Weeden Cooke, the house-surgeon, and reported in the 'Lancet' of July 1, 1848. It is as follows:—

"The patient being under chloroform, the diseased foot (the left) having been drawn forwards, so as to be free of the table, I made an incision from malleolus to malleolus, directly across the heel. A second incision was next carried along the edge of the sole from the middle of the first, to a point opposite the astragalo-scaphoid articulation, and another on the opposite side of the foot, from the vertical incision to the situation of the calcaneo-cuboid joint. These latter incisions enabled me to make a flap about two inches in length from the integument of the sole. In the next place a circular flap of integument was formed between the two malleoli posteriorly, the lower border of the flap reaching to the insertion of the tendo-Achillis. This flap being turned upwards, the tendon was cut through, and the os calcis having been disarticulated from the astragalus and cuboid bones, was removed, together with the integument of the heel, included between the two incisions. The lateral ligaments connecting the astragalus with the tibia and fibula were now divided, and the knife was carried into the joint on each side, extreme care being observed to avoid wounding the anterior tibial artery, which was in view. The astragalus was then detached from the soft parts in front of the joint, and from its articulation with the scaphoid bone, and the malleoli were removed with the bone-nippers. The only artery requiring ligature was the posterior tibial. During the few minutes the operation lasted, the patient did not manifest the slightest symptoms of pain or uneasiness. On bringing the edges of the flaps together, they were found to fit with accuracy, and were secured by twelve interrupted sutures. The wounds were covered by several folds of lint, and supported by a light bandage. The patient, who had lost but very little blood, was then removed to his bed.

"On the 21st of February, he was discharged the hospital, exactly two months after the operation, to go into the country, the foot being well, with the exception of a small opening. He came again up to town on the 15th of April, and had become stout. The sinus on the left side of the foot had closed, but a slight collection of matter had formed a little above the instep; this was discharged by

of bone at first, and by making free openings for the discharge of matter in every direction in which it may appear inclined to insinuate itself, the limb may be preserved in a useful shape.

§ Wounds from cannon-shot injuring the fore part of the foot are better remedied by amputation at the joints of the tarsus with the metatarsus, than by sawing these bones across; but when the injury affects only one or two toes, they may be removed separately, recollecting that it is of greater importance to preserve the great toe than any other, and this toe is worth preserving alone, when any of the others would be rather troublesome than useful. Musket-balls seldom commit so much injury as to require amputation as a primary operation, although they frequently render it necessary as a secondary one. The splinters of bone are to be removed, the ball and extraneous substances are, if possible, to be taken out; and if the bones, tendons, and blood-vessels are so much injured as to render the attempt to preserve them useless, amputation is to be performed; but if the preservation of the limb be thought practicable—and it generally will be so in wounds from musket-balls—the attempt must be made under the most rigid antiphlogistic treatment, the local application of leeches and cold water from the first, and with free openings for the subsequent discharge. Musket-balls seldom injure the metatarsal bones so as to require their removal with their toes, and under the treatment above-mentioned, these wounds will in general be healed without further operation. Wounds from grape-shot occasionally render the removal of the metatarsal bone of the great toe at the tarsus necessary, although much should be done to save it. The little and adjacent toes are also sometimes removed at the tarsus, the middle ones but seldom, as it is not an easy operation to perform, in consequence of the naturally close attachment of these bones, and the additional compactness they have acquired from the pressure of the shoe. Hæmorrhage from the arteries of the foot authorizes in a very slight degree amputation, even when superadded to other causes; for the incisions necessary to secure the bleeding vessels will not, in general, add much to the original injury unless they are very extensive; on the contrary, they will render the wound less complicated and more manageable.

§ Amputation at the tarsus, when it is proposed to save the flap from the under part of the foot, is performed in the following manner:—The joints of the metatarsus with the tarsus, being well ascertained, an incision is to be made across the foot, in the direction of the joints, but from half to three-quarters of an inch nearer the toes, and the integuments drawn back over the tarsus From the extremities of this incision, two others are to be made along the sides of the great and little toe, for about two inches and a half, according to the thickness of the foot; and the ends of these two incisions are to be united by a transverse one down to the bone, on the sole of the foot, the corners being rounded off. The flap thus formed on the under part is to be dissected back from the metatarsal bones, including as much of the muscular parts as possible, as far as the under part of the joints of the tarsus. The metatarsal bones are now to be removed by cutting into and dislocating each joint from the side, commencing on the outside, by placing the edge of the knife immediately above, but close to the projection made by the posterior part of the metatarsal bone supporting the little toe, which prominence is always readily perceived. The arteries are to be secured; any long tendons and loose capsular ligament are to be removed with the knife or scissors, and the under flap, formed from the sole of the foot, is to be raised up so as to make a neat stump, when brought in contact with the upper portion of integuments that were first turned back; the whole to be retained in this position by sutures, adhesive plaster, and bandage. When the skin of the under part of the foot is much torn, which is not uncommon in a wound made by a fragment of a shell, the flap cannot be formed from it; in this case it must in great measure be saved from the upper part; but the integuments being here so much thinner, the flap is not so good a defence against external violence, and will be more readily affected by cold. The metatarsal bones may be sawn across in a straight line, in preference to removing them at the joint; and although the whole may be sawn across at once with more ease than any one of them individually, except the outer ones, yet the stump is never so much protected from external violence as when the operation is performed at the joint of the tarsus.

§ Amputation of the foot, leaving the astragalus and calcis, may, in certain cases of injury anterior to these bones, be performed with advantage, care being taken to make the under flap so large that the line of cicatrization may be on the upper and anterior edge of the stump, rather than transversely across the face of it, in order to render it firmer and better able to resist and sustain any pressure which may be applied to it.

The limb being placed on the table, and held by an assistant, the surgeon ascertains the situation of the joint formed by the junction of the astragalus with the scaphoides, which will be indicated by the prominence on the inside of the tarsus, discoverable by passing the finger forwards from the malleolus internus towards the side of the great toe. The joint of the os cuboides with the os calcis on the outside, is always to be found about half an inch behind the projection formed by the posterior part of the metatarsal bone of the little toe. The under part of the foot being firmly held in the palm of the surgeon's hand, he places the point of the thumb on the external joint, and that of the fore-finger over the internal one, which indicate a transverse oblique line, for the first incision, and which should commence near the thumb, and be continued with a semilunar sweep, the convexity towards the toes, until it terminates at the side of the foot where the fore-finger was placed. The joint between the astragalus and scaphoides is now to be opened, by directing the knife from within obliquely outwards towards the projection of the metatarsal bone of the little toe. These bones are then to be dislocated by pressure, and the ligaments retaining them divided. The joint between the os cuboides and the os calcis is now to be opened from without inwards, and the bones dislocated. The strong inter-articular ligament being cut, and the joint largely opened, the knife is to be passed between the under surfaces of the scaphoides and cuboides, and the soft parts adhering to them, and cut from behind forwards a flap sufficiently large to cover the wound, which is then dressed in the usual manner.

§ Mr. Wakley, jun., has lately performed a successful operation for the removal of the astragalus and os calcis, deserving of imitation in peculiar cases. A description of the operation is given in a report by Mr. Weeden Cooke, the house-surgeon, and reported in the 'Lancet' of July 1, 1848. It is as follows:—

"The patient being under chloroform, the diseased foot (the left) having been drawn forwards, so as to be free of the table, I made an incision from malleolus to malleolus, directly across the heel. A second incision was next carried along the edge of the sole from the middle of the first, to a point opposite the astragalo-scaphoid articulation, and another on the opposite side of the foot, from the vertical incision to the situation of the calcaneo-cuboid joint. These latter incisions enabled me to make a flap about two inches in length from the integument of the sole. In the next place a circular flap of integument was formed between the two malleoli posteriorly, the lower border of the flap reaching to the insertion of the tendo-Achillis. This flap being turned upwards, the tendon was cut through, and the os calcis having been disarticulated from the astragalus and cuboid bones, was removed, together with the integument of the heel, included between the two incisions. The lateral ligaments connecting the astragalus with the tibia and fibula were now divided, and the knife was carried into the joint on each side, extreme care being observed to avoid wounding the anterior tibial artery, which was in view. The astragalus was then detached from the soft parts in front of the joint, and from its articulation with the scaphoid bone, and the malleoli were removed with the bone-nippers. The only artery requiring ligature was the posterior tibial. During the few minutes the operation lasted, the patient did not manifest the slightest symptoms of pain or uneasiness. On bringing the edges of the flaps together, they were found to fit with accuracy, and were secured by twelve interrupted sutures. The wounds were covered by several folds of lint, and supported by a light bandage. The patient, who had lost but very little blood, was then removed to his bed.

"On the 21st of February, he was discharged the hospital, exactly two months after the operation, to go into the country, the foot being well, with the exception of a small opening. He came again up to town on the 15th of April, and had become stout. The sinus on the left side of the foot had closed, but a slight collection of matter had formed a little above the instep; this was discharged by

means of a puncture with the lancet, and he was directed to return to the country, and dash cold water over the foot two or three times daily. On the 10th of June he returned to town, and to his employment. There was then not the vestige of a wound, the last opening having completely healed. He was ordered to wear a high-heeled boot. He is now a healthy-looking man, and walks very well."

As the posterior tibial artery must be divided, the preservation of the anterior one is essentially necessary; the success of the operation depends upon it. This artery, accompanied by its vein and nerve, lies close upon the astragalus; the artery may be said to be even attached to it, a point requiring the greatest attention in dissecting out the bone without injuring this vessel, which is seen under the scalpel.

§ Amputation of a single metatarsal bone, on the outside or inside of the foot, is to be done by an incision round the root of the toe, terminating in a line on the outside of the foot, which is continued down to the joint of the tarsus. The integuments are turned back above and below from the metatarsal bone, which is to be dissected out, with the toe attached to it, and the flaps brought together, so as to leave but one line of incision. In military surgery there is always a wound; and when the removal of the bone is necessary, it is in general an extensive one, and with loss of substance, so that a covering cannot be saved in this way, especially on the upper part of the foot, where the ball or piece of shell strikes. The surgeon, therefore, must be prepared to look for his covering on the under part, where he will occasionally not be able to procure it in sufficient quantity, and it must not be forgotten that the neighbouring parts will often be injured. The object must then be to save the integuments from such parts as are uninjured, so as to cover in the wound as nearly as possible when the bone is removed. In doing this the first incision should commence at the upper and inside of the toe, and be carried round so as to separate the toe from its attachment to its fellow. If the injury be entirely on the upper part, the continuation of this incision must be so regulated as to form the whole of the flap from below, and the commencement of it above must be continued round the injured part, so as to meet the lower end near the articulation of the bone with the tarsus, and *vice versâ*. If the ball have gone directly through, destroying the integuments above and below, the incisions must surround the injured part in such manner, on the upper and under side of the foot, as to allow the flaps to be formed in every other part, except where the injury was inflicted, and from whence granulations must arise. By saving skin everywhere else, the wound will be much diminished in size, will heal sooner, will be less liable to suffer from external violence, and less obnoxious to the subsequent pain, which generally at intervals attends wounds of this kind.

§ M. de Beaufoy invented a foot for the wooden pin used by the soldiers in the Invalides, at Paris, who had suffered amputation above or below the knee, which Mr. Bigg, of Leicester square, has tried in a satisfactory manner on some of the old soldiers similarly mutilated at Chelsea Hospital, by permission of the authorities; and one of them reports, that with it he not only found his step to be steadier, and taken with greater certainty, but also that its length was much increased, and that he could walk twice the distance in the same time as he could with his ordinary pin-leg.

The advantage of the invention is, that whereas a common wooden pin only gives one point of support, and consequently the body is obliged to raise itself, so as to describe an arc, of which the end of the wooden pin is the centre, the curved foot acts like a *series of levers*, each successive point of it being a *fulcrum*. It may be compared to a portion of a wheel: the body of the patient is rolled forward, with scarcely any effort of his own, the support being continuous, and preventing the slightest liability to slip. It also lessens the shock of walking, as the foot begins to act before the whole weight of the body is thrown upon it.—*Lancet, July* 17, 1852, *p.* 47.

§ An upper extremity should not be amputated for almost any accident which can happen to it from a musket-shot; and there is scarcely an injury of the soft parts likely to occur which authorizes amputation as a primary operation.

§ If the head or articulating extremity of the bone entering into the composition of the shoulder-joint be merely or slightly injured by a musket-shot, the arm ought to be saved with some defect of motion in the joint. The wound should

be enlarged in the first instance, to allow of a sufficient examination with the point of the finger, and any loose pieces of bone should be removed. Inflammation is to be restrained within due bounds until suppuration has been established, when, if a clear depending opening should not exist for the discharge of the matter poured out, it should be made, and any loose portions of bone removed. The principal points to attend to are, the prevention of sinuses around the joint, by the formation of dependent openings, position, perfect quietude, due support, the methodical application of bandages, and occasional mild stimulating injections into the wound. A simple incised wound penetrating the joint, and even injuring the bone, does not call for any immediate operation. An attempt should be made to effect a cure by the first intention, which can only be effected by means of a proper position and support.

§ If the head of the bone be much splintered, or if a ball have gone through it, that portion should be sawn off; for a part thus injured has often been a source of great inconvenience and suffering for many years afterwards—during, in fact, the remainder of the life of the sufferer; which misery would have been avoided by the excision of the bone in the first instance—an operation which ought in fact to be done even at a later period, if it has not been performed at the time when the injury was received.

§ When the splinters extend far into the shaft of the humerus, it may be proper to amputate the whole extremity, especially if the great artery be also wounded; but the shaft is seldom broken in such accidents to any great extent, and amputation should be confined almost to injuries from cannon-shot or shells, or heavy machinery, destructive of the soft parts as well as of the bone.

§ When the injury done to the upper arm is so extensive that it cannot be saved, although the head of the humerus is not injured, the amputation should take place immediately below the tuberosities, and not at the joint, which latter operation always renders the shoulder flatter, and the appearance of the person more unseemly, than when the head of the bone is left in its place.

§ It will frequently happen that the arm may be irrecoverably shattered, and the thorax partake in a less degree of the injury, there being apparent only some slight contusion or grazing of the skin; if low down, the elasticity of the false ribs may have prevented the integuments being much injured in appearance, although the blow has been violent, yet the force of the large shot may have ruptured the liver or spleen. If higher up, it may perhaps fracture the ribs, in addition to a more severe contusion of the integuments. When these accidents occur, the symptoms arising from the wound or contusion of the trunk of the body are to be first considered. If they do not indicate a speedy dissolution of the patient, or the prospect of such an event in two or three days, the operation ought to be performed, and a chance of recovery given the sufferer, which he would not have, the arm being retained, and the injury of the chest remaining the same. The danger to be apprehended in the more favourable cases is from inflammation, and this will be rather diminished than increased by the operation; the danger of deferring which is manifest and certain, whilst the injury committed in the thorax or abdomen is not ascertained, and its effects may be obviated. If the termination should be unfavourable, it can only be a matter of regret for the sake of the individual, and not for the non-performance of a duty. If the cavity of the chest be laid open, or several ribs beaten in, or a stuffing of the lungs take place from a large ruptured blood-vessel, all of which circumstances are obvious, and cannot be mistaken, the operation would, in all probability, be useless. A hemorrhage of short duration, or the expectoration of blood in moderate quantities, although a dangerous symptom, is not to be considered as depriving the patient of a reasonable chance of life, for it frequently follows blows from more common causes, and from which many people recover. If the operation be delayed to ascertain what injury may have been done to the chest, from the symptoms that will follow, the danger resulting from both will be increased; and even when it is ascertained that there is but little mischief existing in the thorax, the operation can no longer be performed with the same propriety, in consequence of the inflammation which has supervened; and the patient will probably die, when he would have recovered under a more decided mode of treatment

§ A round shot or flat piece of shell may strike the arm, after rebounding from

the ground, or when nearly exhausted in force, without breaking the skin, or only slightly doing it, yet all the parts within may be so much injured as not to be able to recover themselves: the bone may be considerably broken or splintered, the muscles and nerves greatly contused. The injury may not, perhaps, be quite so extensive. The bone may be merely fractured, and yet the soft parts will often be so much destroyed as not to be able to carry on their usual actions. A ruptured blood-vessel may, with an apparently slight external wound of this nature, pour out its blood between the muscles, and inject the arm to nearly double its size, all of which are causes that render an operation necessary, and require decision, for inflammation will, and mortification may, ensue in a short time, when the most favourable moment for operation will have been lost.

§ *Amputation at the shoulder-joint* is an operation of little surgical importance. The fear formerly entertained of loss of blood has passed away, and every surgeon now knows that if he should happen to cut the axillary artery unintentionally, it can be held between the forefinger and thumb, without difficulty or danger, until a ligature can be placed upon it. No accomplished surgeon of the present day should give himself the least concern about compressing the subclavian artery. It is, on the contrary, better, when the arm is raised from the side preparatory to entering or using the knife, that the surgeon should then feel the pulsation of the artery in the axilla, that he may the more easily avoid, and subsequently command it. The axillary artery does not throw out much blood at each pulsation, and a little pressure with the end of the forefinger will always prevent bleeding until the surgeon is prepared to take hold of the vessel with the tenaculum or forceps. The operator should, in fact, divest himself of all fear of hemorrhage. When gentlemen are, however, afraid, and cannot help it (for Henry IV., of France, *ce roy si vaillant*, always felt an inconvenient intestinal motion when a fight began), compression may be made upon the subclavian artery, by the thumb of an assistant, the round handle of a key, or the padded end of the handle of a tourniquet; the latter forms the best pad, and is usually at hand.

§ The great point to be attended to in performing the operation is, to save skin to cover the stump. The directions, therefore, which are usually given for doing it after any particular method can only be occasionally useful, for the surgeon may not always be able to select the parts to be divided or retained. In cases of malignant disease of the bone and periosteum of the middle of the arm, the operation should be for the removal of the whole of the bone at the joint, and not the amputation of it below the head, although the appearance of the integuments, and of the bone itself, would seem to encourage the attempt to preserve the roundness of the shoulder. In such cases the removal of the extremity at the joint may be done by any one of the many ways which have been recommended for its performance. In none should the acromion or coracoid processes be exposed, unless previously injured. Neither is it necessary to lose time, or to give pain, by depriving the glenoid cavity of its cartilage; but it should always be borne in mind, that if the nerves are not shortened after the removal of the arm, they may be included in or adhere to the cicatrix, and cause, during a long life, much distressing pain to the sufferer.

§ Amputation at the shoulder-joint, performed immediately after the receipt of an injury, is now a very simple operation; for which simplicity English surgery is indebted to the Peninsular war. As a *secondary* operation, or done at a later period, when the parts are all impacted together, it is somewhat less so. In both stages it is absolutely necessary to remember—1st. That except in cases of disease and not of injury, the shaft of the bone must be broken; and that *all* the directions usually given for rotation of the arm inwards and outwards, during the operation, are *unnecessary cruelties* not to be attempted with a broken bone. 2nd. That the arm should always be raised from the side and supported by the hand of an assistant, who can feel, if he pleases, at any time of the operation, the pulsation of the axillary artery; and all operative methods are condemned, in which this precautionary measure is not the first step.

§ *Operation by two flaps, external and internal.*—The outer, beginning near an inch below the acromion process (the hair in the axilla having been previously removed), is to be carried down with a gentle curve so deeply as to divide the del-

toid muscle, and to show the long head of the triceps at its under and outer edge. The second incision is to be carried in a similar direction on the inside, through the deltoid muscle, but need not divide the insertion of the pectoralis major, which should be exposed. These flaps being held back, the joint will be seen and readily opened into at its upper part, by cutting upon the head of the bone, in doing which the long tendon of the biceps will be divided, which allows the head of the humerus to drop from the glenoid cavity sufficiently to admit the fore-finger of the left hand, on which the supra-spinatus, infra-spinatus, and teres minor may be cut through externally, as they go to be inserted into the great tuberosity, and the thick tendon of the sub-scapularis muscle internally, where it is attached to the smaller tuberosity. The head of the bone is then readily drawn out from the glenoid cavity, when the inner flap, including the axillary artery, vein, and nerves, may be taken hold of between the two fore-fingers and thumb of an assistant, whilst the surgeon with one sweep of the knife, divides all the remaining parts below. The axillary and the posterior circumflex arteries will have to be secured; the anterior circumflex, when arising from the posterior, is frequently cut off with it; the nerves are to be shortened; the flaps brought together by sutures; and an especial pad placed upon the pectoralis major to prevent unnecessary retraction if possible.

§ *The operation by one*, or nearly one upper flap, is to be performed when the under soft parts of the arm have been destroyed and the bone broken. It may be done by thrusting a small two-edged knife through the integuments and under the deltoid muscle, from side to side, to form a flap; or it may be made by commencing an incision an inch above the posterior fold of the arm-pit, and carrying it over the arm in a curved form, the convexity being downwards, to the same height on the anterior fold; the lowest part of the incision being five fingers' breadth from the point of the acromion, the posterior end or point of it being somewhat higher than the anterior one. The flap turned up, and the tendon of the pectoralis major divided, the head of the bone is to be exposed and separated as before stated, as much as possible of the integuments being preserved on the under part of the arm. This will often be best done by dissecting out the head and broken pieces of bone, and then preserving in succession, every piece of sound integument, before the artery, vein, and nerves, are divided.

§ Lisfranc, and many French and Continental surgeons, recommend the operation to be done with a pointed, double-edged knife, in the following manner:—The arm being approximated to the trunk, in a state of half pronation, the point of the knife is to be entered at a small, triangular space, which may be perceived on the inside of the fulness of the shoulder, bounded above by the scapular extremity of the clavicle, and a small part of the acromion; on the inside, by the coracoid process; and on the outside, by the head of the humerus. The knife thus entered obliquely is to be passed across to the outside, opening in its passage into the joint, when, by sliding the knife forwards over the head of the bone, whilst the deltoid is raised up by the operator or an assistant, a flap is to be formed, during which proceeding the arm is to be raised from the side, to facilitate its performance. If this flap be well made, the upper part of the capsular ligament, the tendons of the long head of the biceps and of the supra-spinatus, are divided, and the tendons of the infra-spinatus, teres-minor, and sub-scapularis, are also cut through in part, if not entirely. The upper and posterior flap is thus completed.

In the second step of the operation, the surgeon passes the knife behind the head of the humerus, and makes the under and anterior or inner flap, by cutting downwards and inwards, including in it a very small portion of the deltoid, the pectoralis major, latissimus dorsi, teres-major, the triceps, coraco-brachialis, the short head of the biceps, the vessels and nerves, when the limb is separated from the body. The flaps are nearly of the same size, and are to be brought together by sutures.

M. Baudens recommends the operation, performed in this manner, to be begun by introducing the double-edged straight knife from below, and passing it upwards to the same spot where Lisfranc commences.

In the secondary operation, or that done several weeks after the receipt of the injury, in consequence of the attempt to save the arm having failed, the soft parts will often be found so altered and impacted together, that they will not yield or

separate, and nothing is gained but by each cut of the knife, causing thereby some little delay, inconvenience, and loss of time.

§ *Amputation of the arm immediately below the tuberosities of the humerus* ought to be done in the following manner:—the arm being raised from the side, and an assistant having compressed, or being ready to compress, the subclavian artery, the surgeon commences his incision one or two fingers' breadth beneath the acromion process, and carries it to the inside of the arm, below the edge of the pectoral muscle, then under the arm to the outside, where it is to be met by another incision, begun at the same spot as the first, below the acromion process. The integuments, thus divided, are to be retracted, and the muscular parts cut through, until the bone is cleared as high as the tuberosities. The artery will be seen at the under part, and should be pulled out by a tenaculum or forceps, and secured as soon as divided. The bone is best sawn, the surgeon standing on the outside; the nerves should be cut short, and the flaps brought together by two or three silk or leaden sutures. There are few or no other vessels to tie, and the cure is completed in the usual time, whilst the rotundity of the shoulder is preserved. This operation is similar to that above recommended for the amputation at the joint, which in many cases it is intended to supersede.

§ *Excision of the head of the humerus.*—The point governing the modus operandi of this operation is, and ought to be, the fact that under the most favourable state of recovery which can take place, the shoulder joint usually becomes so stiff that its ordinary motions may be considered to be lost. Operative processes which have for their principal object the sparing of the deltoid muscle are unnecessary, for, if spared, it is as useless as if it had been cut; and it seems to have been forgotten that, when cut, it re-unites, and becomes nearly as strong as before it was injured. It is the joint which cannot be moved, not the muscle which has lost its power. I prefer, therefore, in doing this operation, where the injury will permit of it, to make a *short* crescentic flap by an incision across the anterior part of the shoulder, as in the operation of amputation, which, on being turned up, leaves the joint exposed. The edge of the knife being applied to the head of the bone in a line below, but immediately under the acromion process, divides the capsular ligament, and with it the long tendons of the biceps, on which the arm drops from the socket, or glenoid cavity, and allows the finger to be introduced, when the three muscles inserted into the great tuberosity may be cut through, and the sub-scapularis, inserted into the small tuberosity, should also be divided. The head of the bone is then readily brought out, and may be easily detached from any surrounding connexions, and sawn off with little, or almost no loss of blood. The elbow is to be supported, so as to bring the end of the sawn bone in apposition with the glenoid cavity. The flap may be allowed to unite with the parts below as soon as it will, the shot holes, if any, being in general sufficient to allow of such discharge as may be necessary.

In cases of *recent* injury, some aid will be obtained in keeping the sawn end of the humerus in apposition with the glenoid cavity, by not dividing the long tendon of the biceps. This must be done by dissecting it out of its groove in the humerus, between the tuberosities, and by cutting through the capsular ligament vertically, so as to follow it up to its attachment to the upper edge of the glenoid cavity, when it is to be drawn aside with a blunt hook, until the operation has been completed: a proceeding difficult of accomplishment in old cases of disease or injury, and in them not necessary nor advisable.

§ Professor B. Langenbeck, in order to save the deltoid muscle, proposed and practised this operation during the Danish war in Schleswig Holstein in the following manner, with success in several instances. Begin the incision through the integuments and deltoid muscle immediately below the anterior border of the acromion, and continue it directly downwards, over the minor tuberosity of the humerus, to the extent of four inches. Separate the parts, open the sheath of the long tendon of the biceps muscle, and draw out and hold it on one side with a blunt hook. Rotate the arm outwards (*if it will rotate*) to facilitate the division of the tendon of the sub-scapularis; then rotate the arm inwards, to aid in the division of the tendons of the supra-spinatus, infra-spinatus, and teres minor muscles, inserted into the great tuberosity. Complete the division of the capsular ligament, push the bone

through from below, using the arm as a lever if you can, and saw it off. No arteries of consequence are wounded.

This operation would not be so easy of execution as is supposed in cases in which the head and neck of the humerus are broken from the shaft; and would be very difficult of execution in old cases in which the soft parts are so hardened and impacted as to admit of little or no motion.

§ Whenever the head of the humerus is broken, with even considerable injury to the soft parts around, it will always be better to saw off the broken part of the bone in the first instance, and to retain the remaining portion as closely as possible in apposition with the glenoid cavity. The suffering will in the end be less, and the cure be effected, in general, without the loss of the arm.

If, from some complication of injury, the axillary or other artery should give way during the treatment, the extremity is not to be amputated. The artery is to be secured by one ligature applied above the opening in it, and another below it: the surgeon always bearing in mind the fact, that the proper way to get at the axillary artery is by cutting *across* the fibres of the pectoral muscle, and not in the direction of them; and that the ligature of the subclavian is not to be resorted to until nothing else remains to be done by which the hemorrhage is likely to be suppressed.

§ *Amputation of the arm* by the common circular incision should only be practised in the space between the lower edge of the insertion of the pectoralis major and the elbow joint; and rarely in cases of injury from musket-balls. No common flesh-wound, made either by cannon or musket-shot, even including a division of the artery, absolutely demands this operation, the bone being uninjured. If, in addition to such a destructive flesh-wound, the bone be broken, or if it be mashed with the muscles by an oblique stroke of a round shot, or the fore-arm be carried away or destroyed, it is admissible. It is to be done in the following manner:— An assistant draws up the integuments with both hands; another does the same downwards, if the parts admit of it; the fore-arm is to be moderately bent. The integuments are to be divided by a circular incision, and retracted. The muscles and vessels are to be then cut through by one sweep of the knife, if it can be done. The muscles adhering to the bone are then to be separated from it to the extent of two inches. The retractor is to be applied, and the periosteum divided by one circle of the knife around the bone, and in the circle thus cut the saw is to work until the bone is divided; attention being paid to the directions already given to saw in a perpendicular, not slanting direction. The artery or arteries are to be tied, the surface of the stump cleansed with warm and then with cold water, and dried. Sutures are useful.

§ Mr. Luke performs the operation by two flaps, on the same principle as in the thigh. There is a close resemblance in the manner of amputating the arm by the double-flap operation to that adopted for the amputation of the thigh. The first flap is made posteriorly to the bone by transfixing the limb, for which purpose the knife is entered at the mid-point between the anterior and posterior surfaces, carried transversely across the limb, and made to cut towards the posterior surface, in an oblique direction, until all the soft structures are divided. It is necessary, in entering the knife, to bear in mind that the bone lies opposite to the mid-point, and that, in carrying the knife across the limb, it would strike against the surface of the bone, unless means were adopted for its prevention. This is easily done by grasping the structures which are to form the posterior flap between the fingers and thumb of the left hand; and by drawing them backwards during the time the knife is entering at the mid-point and being carried across the limb. Having formed the posterior flap, the anterior one is formed as in amputation of the thigh, by cutting inwards from the surface towards the bone with a sweep, which will make this flap equal in length to the posterior. The operation is completed by dividing the remaining soft parts by means of a cut carried circularly around the bone, and by sawing the bone in the line of division. The after-treatment is the same as in the thigh.

§ *Excision of the elbow-joint.* An incised wound into the elbow-joint, of moderate extent, cutting off with it a part of the condyle of the humerus or the head of the radius, or a part of the ulna, demands the removal of the injured piece of bone only. The fore arm should be bent and the antiphlogistic treatment

fully carried out. A ball fracturing the olecranon, or other portion of a single bone, although opening into the joint, does not immediately require any operation.

If a ball should lodge in the lower part of the humerus, or in either of its condyles, it should be removed, if necessary, by the trephine, or other appropriate instrument.

When the articulating ends of the humerus, radius, and ulna are wholly or in part injured by a musket ball, it was formerly the custom to amputate the arm, in such instances of great mischief—an operation which should be superseded by that of excision of the joint, by which the fore-arm will be saved, and considerable use of it retained.

To perform this operation, a straight, strong-pointed knife is to be pushed into the joint behind, immediately above but close to the olecranon process, and exactly at its inner edge, to avoid the ulnar nerve, which lies between it and the inner condyle, to which it may be considered to be affixed. The incision thus begun is to be carried outwardly to the external part of the humerus, dividing the insertion of the triceps. At each end of this transverse cut an incision is to be made upwards and downwards for about two inches each way, the three resembling the letter H. The flaps thus made being turned up and down, the olecranon should be sawn across, together with the great sigmoid cavity, and the coronoid process of the ulna, the insertion of the brachialis internus being previously separated from the coronoid process. Before this is done, the ulnar nerve should be separated with its attachments from the inner condyle, and turned aside to avoid injury. The joint being now fully exposed, the head of the radius may be sawn off, or cut through with the strong spring scissors if possible, above the tubercle into which the biceps tendon is inserted. The extremity of the humerus should next be pushed through the wound, and the broken end sawn off, a spatula or other thin solid substance being placed underneath it, to prevent the brachial artery or median nerve being injured. Any hemorrhage which there may be having ceased, the fore-arm is to be bent, the bones are to be placed in apposition, and the incisions approximated by sutures and sticking-plaster, duly supported by compress and bandage, so that union may take place if possible, particularly of the transverse wound first made. The arm should be supported by a sling, and dressed early, as the shot hole or holes must remain open and discharging. Some motion of the new joint to be formed may be expected under gentle passive motion; but as stiff joint cannot always be avoided, the arm should be kept bent.

§ *Amputation at the elbow-joint* has been recommended, but not frequently performed. It may be done in any way by which good covering can be obtained, and it has been supposed that the long stump thus made is more useful if the olecranon process be sawn across, and left with the triceps attached to it, rather than if it be removed. When the parts are sound, a flap may be made in front by introducing a straight double-edged knife over the outer condyle, and carrying it across and through the softer parts over the opposite or inner condyle, when by cutting downwards and outwards a flap is to be formed of from 3 to 4 fingers' breadth in length. A shorter flap is to be made behind, when both are to be raised, and the bleeding vessels previously secured, the external lateral ligament being divided. The radius is to be separated from the humerus, when the olecranon may be sawn across, or, if the arm be bent, separated from the humerus without difficulty. The flaps are to be brought together and retained in the usual manner.

§ *Amputation of the fore-arm* is seldom required after wounds from musket-balls. The bones can be readily got at, and large pieces removed with ease. The arteries can be cut down upon and secured without difficulty, except at the upper part, and even there with some little sacrifice of muscular parts, which are not to be spared. The fascia may be divided freely in every direction, and as mortification from defect of nourishment rarely takes place in the fingers, as it does in the toes, when the great arteries are injured, every effort should be made to save a fore-arm, however badly it may at first appear to be injured.

The flap operation is to be preferred to the circular, particularly when a little above the wrist; to which operation Baron Larrey and the surgeons of France particularly objected during the late war. Having done it most successfully since 1806, however, it is recommended as preferable to any other, even when

the injury admits of its being done near the carpus. When the nature of the injury does not admit of two equal flaps being formed, it must be done by two unequal ones, or even by one, it being important for the fixing of an artificial hand or other help, to have a long stump.

The arm being placed and held firmly in the intermediate position between pronation and supination, with the thumb uppermost, so that the radius and ulna are in one line, a sharp-pointed straight knife is to be entered close to the inner edge of the radius, and brought out below at the inner edge of the ulna. It is then to be carried forward for half an inch, and made to cut its way out with a gentle inclination, so as to form a semi-circular flap. Re-entered at the same point as before, a similar flap is to be made on the outside, the position of the bones being a little altered to admit of its easy execution. The two flaps are to be turned back; the tendon of the supinator radii longus, and all other tendinous, muscular, or inter-osseous fibres, not cut through, are then to be divided, and the linen retractor run between the bones, which are to be sawn across at the same time. All pressure being taken off, the tendons and the vessels, if long, are to be cut short, and the latter to be tied, after which the flaps are to be brought together by sutures, and retained by sticking-plaster, compress, and bandage.

§ When the operation is to be performed above the middle of the arm, it may be done by the *circular* incision.

The arm being placed with the thumb uppermost, an assistant should retract the integuments as much as possible, whilst the operator makes a circular incision through them. They are then to be drawn up for nearly an inch. The muscles on the inside of the arm should be divided by one slanting cut down to the bones; and then those on the outside. The bones are to be cleared by cutting through any muscular fibres attached to them, when the interosseal ligament should be divided, and the linen retractors passed between the bones, which may then be sawn through at the same time without difficulty. The stump is to be dressed in the usual manner. The operation may be done by cutting through the integuments and muscles at once in an oblique manner, until the flaps thus formed shall be sufficiently large to make a thick cushion over the ends of the bones.

§ *Amputation at the wrist*, or the joint of the radius and ulna, with the first row of the bones of the carpus, has been recommended by some surgeons as preferable to the amputation above the ends of the radius and ulna. The hand being placed midway between pronation and supination, the soft parts are to be divided by a circular incision, beginning from half an inch to an inch below the ends of the radius and ulna. The integuments being turned up without the tendons, they are to be divided, and the joint is to be opened into before the spinous process of the radius; and, whilst the hand is pressed down, the knife should divide all the soft parts, and separate the carpus from the radius and ulna. The wound is to be closed by sutures in the usual manner. When a circular incision cannot be made, in consequence of the nature of the injury, and this operation is still preferred, a covering for the bones must be obtained where it can be procured, by one or more flaps.

§ *In all injuries of the hand*, the value of a thumb and a finger, or of two fingers, or even of one, should be borne in mind, and no part should be removed that can be saved, and appears likely to be of use. When cannon-shot, large splinters of shells, or grape-shot have struck the hand, amputation will often be necessary, but the foregoing precept should never be forgotten.

A musket-ball fairly passing through the hand generally fractures two metacarpal bones, although a small ball may pass between without breaking either. The wounds should be enlarged, and the broken ends of the bones sawn off, or the splinters removed, and the points of bone smoothed off, the tendons to be carefully preserved, and vigorous antiphlogistic measures adopted. The tendency to tetanus or trismus will be best obviated by such measures, the incisions, when necessary, being made in the direction of the bones and tendons. Any hemorrhage which can ensue will be readily commanded by ligature, by torsion of the vessel, or by a small graduated compress and bandage, when these are applicable.

§ When one or more fingers are destroyed, and the metacarpal bones injured, they are to be sawn or cut off, but not removed at the carpus, although an open

ing into the joint of the carpus will generally do well, if skin can be saved to cover it. In all cases of amputation of one or more fingers, the metacarpal bones, if injured, should be left as long as possible, and particularly that of the index-finger, when the thumb remains. In all cases it is better, if possible, to leave the heads of the metacarpal bones in their places, rather than open into the joint of the carpus, if it can be avoided. If the articulating heads must come out, a strong, thin scalpel is to be pushed in between the bones, the ligaments cut through above, below, and at the sides, and care should be taken, in removing one or two of these bones, not to dislocate the others, and the joint should be covered by a flap or flaps made for the purpose, the sides of the remaining fingers being covered in a similar manner. This succeeds admirably, when the two outer bones and fingers only are taken away.

§ *The phalanges* of the fingers may be removed by making a flap from the upper or under part, or from both, or from the sides. The square flap from the upper part of the finger is preferable, when the joint with the metacarpal bone is to be operated upon, the commencing points of the flap being united by a transverse incision on the under part of the joint. It should be recollected, that in all these incisions the larger end of bone belongs to that which is not removed, as may be shown by bending the finger; and that the ligamentous attachment between the metacarpal bones, connecting a middle one to its fellows on each side, should be cut through, when the joint will be easily dislocated. Attention should be paid to the division of the lateral ligaments in the removal of any of the bones of the fingers.

Professor B. Langenbeck has operated in some instances, and he says successfully, without the loss of the finger, by sawing off, in the first case, the articulating ends of the first phalanx and of the metacarpal bone of the fore-finger, in consequence of an injury from a rotating piece of machinery; in another, the ends of the first and second phalanges of the middle finger after a severe laceration; and in a third case, by sawing off the end of the second phalanx, and removing the whole of the bone of the third of the fore-finger from the soft parts, leaving the nail; the man recovering with a shortened but useful finger. In all these cases the flexor and extensor tendons were from the first uninjured.

M. Langenbeck has also removed the metacarpal bone of the thumb; a new bone as a substitute being subsequently formed in its place, although the periosteum had been removed with it, which, however, he is always desirous of separating from the bone, and leaving behind if possible, although he does not consider its remaining in the wound to be essentially necessary for the reproduction of the bone. To do this operation, he directs an incision to be made along the whole length of the bone towards the palmar aspect, thus avoiding the tendons. Then free both articulating extremities, and separate the soft parts from the body of the bone, which is to be held firmly, and drawn outwards by a strong pair of forceps, made for the purpose, with two bent points, or long teeth, to each extremity. As much as possible of the periosteum is to be left in the wound. If the thumb were to be left to itself, it would be drawn inwards towards the palm and shortened, but this is to be prevented by a splint and apparatus to keep the thumb extended until the wound is healed. He uses a small curve knife with a square end, of the size of an ordinary scalpel, to facilitate the separation of the periosteum, when the bone is to be removed entire. It must be remarked, however, that little reliance can be placed on the means indicated for separating the periosteum from an otherwise healthy bone after an accident. When bones are softened by inflammation it may perhaps be done.—*Lancet, Aug.* 7, 1852, *p.* 117.

72.—ON SECONDARY AMPUTATIONS.

By George J. Guthrie, Esq., F.R.S.

[These are not so successful in military as in civil hospitals, because in the former they generally take place within a short time after the primary operation, while the parts are still in a very irritable condition. Besides the inflammation of the veins and sloughing of the stump are in some degree dependent upon

the season; viz., the autumn, in which military operations are usually conducted.]

§ In secondary amputations in parts which have partaken of the extensive irritation which accompanies the original injury, a larger portion of the flaps will require to be preserved, although the integuments and muscles cannot be said to be unsound. In other words, the bone must be cut shorter, or the stump will be conical and bad, and particularly if sinuses containing pus are found to run up between the muscles, or between them and the bone itself—a state very likely to give rise subsequently to caries.

In sawing the bone it may be again stated, the point of the saw should incline downwards, and when two-thirds of the bones are divided, it should be made to cut perpendicularly, whereby the *side* next the operator is the last part divided; and the hazard of splintering the bone at that moment will be avoided, particularly if the limb to be removed is held with great steadiness.

§ In secondary amputations, twice, nay three times the number of arteries will bleed as in primary ones. In the thigh, the femoral artery should be drawn out with a tenaculum or spring forceps, and tied firmly with a single thread of dentists' silk, one of the two ends being cut off close to the knot. The smaller the vessel, the smaller the thread required. Torsion or twisting the smaller vessels, so as to rupture their inner coats, answers very well in cases in which many small ones bleed. When a nerve is known to accompany an artery, it should be carefully separated from it.

§ If bleeding should continue from above the ligature on the extremity of an artery, it is generally caused by some small branch given off from it, and which has been cut so close to the trunk of the vessel as not to have been observed. In this case the artery itself is to be drawn out by the tenaculum or spring-forceps until the bleeding point can be seen, and a ligature placed above it, when the piece below should be cut off with the first ligature applied. This inconvenience will be in general avoided by taking care to divide the principal artery at one stroke of the knife, and with it half an inch at least of the surrounding substances, if the operation is done by the circular incision. If by flaps, the extent of the exposed arteries should be carefully examined, and the ligatures applied at the highest point of exposure, when all below should be removed.

§ When a tourniquet is used, and applied close to the incised parts, it often prevents, even when loosened, the principal vessel from being found, from having pressed on the ends of the muscles. If one is used, it should be removed as soon as possible after the principal artery has been secured. The repeated tightening and loosening of the tourniquet will cause more vessels to bleed in the end, and more blood to be lost, than if it had not been used, and it ought not to be resorted to when good assistance is procurable. In cases of this kind, in which the stump may not cease to ooze, the circulation being good, and sponging with cold water is not effectual, the wound should not be finally closed for two, four, or more hours, until the oozing has ceased, and the parts can be freed from the coagulated blood, and brought together.

§ In cases in which union is not expected to take place, both ends of the ligature should be cut off; for union is not to be desired of the external parts in many instances of secondary amputation, particularly after serious injuries; the inflammation consequent on which has in some degree implicated the structures divided in the operation, rendering them less liable to take on the healthy action of adhesion. The soft parts should be simply approximated by two or more sutures, the edges of the wound having a piece of lint between them. This precaution should be particularly attended to after a great battle, when it is perceived that from the air, the crowded state of the hospital, or the season of the year, the stumps, although they may appear to unite in the first instance externally, do not in reality do so internally.—*Lancet, Aug.* 28, 1852, *p.* 187.

73.—*Amputation at the Ankle.* By Prof. Syme, Esq.—[Prof. Syme states that he has performed this operation fifty times without any mortification of the flap. He makes this statement on account of a letter which he received from a former student of Edinburgh, now in London. Prof. Syme says:]

He tells me that about ten days ago he saw the professor of surgery at King's College perform amputation at the ankle, with commendation of its merits, notwithstanding the risk of sloughing, which he seemed to regard as nearly inevitable; and "strange to say," writes my informant, "on visiting the patient a few days afterwards, I found that the flap had sloughed." In explanation of this result, so different from what he had been accustomed to witness here, he mentions that the operation was performed with complete disregard of a point which I have always believed and represented as essential to success—viz., preserving entire the nourishing vessels of the flap. It is plain that these can only be the anastomosing branches of the integuments; and it is equally clear that cutting at a right angle with the surface must certainly divide them. But it seems that the King's College professor effects disarticulation before he detaches the flap, and therefore *must* apply his knife in this objectionable direction. In representing amputation at the ankle as easy, safe, and free from any risk of sloughing, I understood the operation to be performed in the way recommended; and for the effects, whether immediate or remote, of modifications in the procedure introduced by others, I am of course in no wise responsible. The matter being now explained, I trust that sloughing in London will no longer be considered any disparagement to the success which has attended the operation in Edinburgh.—*Monthly Journal of Med. Science, July*, 1852, *p.* 37.

74.—*Case of Amputation of Little Finger; dangerous symptoms manifested after the Administration of Chloroform; resuscitation by Galvanism.* Under the care of JOHN HILTON, Esq., F.R.S.—[In this case of danger arising from inhalation of chloroform, excitation of the diaphragm proved most valuable. The patient, a female aged 29, had been for the last ten years subject to attacks of syncope. Having had, on the 16th of June, a piece of necrosed bone removed from the fifth metacarpal bone of the left hand, she was sent into the country for the benefit of the pure air. She returned, however, on the 16th July, with the bone in an active state of disease.]

On the 26th of July, at half-past one P.M., the patient (at her own express wish) was placed under the influence of chloroform, of which three drachms were given. She had had her bowels relieved by medicine, and had only taken beef-tea for dinner. The whole of the metacarpal bone was then removed, with the exception of a small portion at the carpal extremity, which was left, to preserve the integrity of the carpal joints. At the completion of the operation, during the performance of which scarcely any blood was lost, the patient manifested perfect consciousness, and answered questions slowly but correctly. As she felt comfortable, and was expressing a wish to walk back into the ward to her bed, and not be carried, she was assisted by two attendants whilst rising from the table; but no sooner did she gain the erect posture than she fell back into the arms of those who were supporting her, and relapsed into a state of insensibility. The pupils were now minutely contracted: the expansion of the chest almost imperceptible; the respiration feeble, slow, and labouring, and chiefly affected by the diaphragm; the pulse 60, feeble, irregular, and unequal in the force of its beats.

Doors and windows were immediately opened, cold air admitted, and thrown in currents across the patient's face by fanning; cold water was dashed upon face and chest, by which an occasional sighing inspiration was excited. Brandy and cold water were freely given, and strong ammonia applied to the nostrils. These means increased for a time the force and frequency of the pulse and respiration; but the insensibility and minutely-contracted pupils remained unchanged. Respiration was now aided by compressing the sides of the chest, with the palms of the hands firmly applied, during the act of respiration, but without satisfactory results.

Notwithstanding the continuance of the above means, the circulation remained feeble, slow, and unsteady, the respiration progressively diminishing in force and frequency, this decline being associated with a corresponding decrease of the temperature of the whole body.

After a trial of two hours and a half of the remedies just described, as the

danger was becoming imminent, the galvanic apparatus was procured, and shocks were passed over the chest and top of the spine, at the origin and insertion of the phrenic nerves, and continued during two or three minutes. This produced the happiest results, as evidenced by the following change in the symptoms:—

The patient raised her body from her bed, sighed frequently and profoundly; a general tremor, of about a minute's duration, ensued, at the end of which she opened her eyelids, complained of pain and fulness in the head, answered questions correctly, and when asked whether she suffered pain during the operation, replied that she had felt none until the ligatures were applied; pulse now 116, full, much stronger; pupils natural.

There was a tendency to relapse into a state of insensibility after the use of the galvanism; but the occasional dashing of cold water on the face, together with the internal administration of the same fluid, appeared to prevent a recurrence.

For a week after the operation, the patient complained of great fulness in the head, and cephalalgia, which considerably disturbed her night's repose. The operation has been perfectly successful; and on the 17th July, one month after admission, she was presented cured.

This case is intended to illustrate the occasional danger attendant on the administration of chloroform, when there is a want of right proportion between the configuration of the head and the general circulation; or, at least, a temporary functional disturbance in the balance of the circulation. The details of the treatment exemplify, in a most striking manner, the utility of galvanism or electricity, in such cases as a resuscitative agent.

The galvanic shocks had not only the effect of producing a marked improvement in the pulse and respiration, but they also produced dilatation of the pupils and complete return of consciousness. That the galvanism deserves the credit of effecting resuscitation cannot be doubted, from the fact of the previous remedies having proved ineffectual, and from the speedy recovery immediately upon its administration. This case is further interesting, as showing that the tendency to relapse into a state of insensibility, from the secondary effects of chloroform, bears a striking relation to the same phenomenon resulting from a poisonous dose of opium. We also see the necessity of carefully watching patients for some time after the restoration to consciousness has been accomplished.—*Lancet, July* 31, 1852, *p.* 103.

75.—*Case of rapid Necrosis of the Tibia; Amputation above the Knee.*—Under the care of J. Avery, Esq., Surgeon to Charing-Cross Hospital.—[The operation in this case was performed after Mr. Luke's plan.]

Mr. Avery made first an ample flap posteriorly by piercing and cutting from within outwards; he then made an equally large flap anteriorly, *not* by piercing and cutting as was done with the posterior flap, but by carrying the knife in a curved direction, antero-posteriorly through skin and muscles, down to the bone. The exact shape of the flap can thus be distinctly delineated, and made with great regularity, exactly of the size best calculated to make a good stump. The appearance of the latter immediately after the operation, showed very forcibly the advantages of this method, as the two flaps formed at once a symmetrical thick and clean cushion for the bone. Nor did the appearance of the stump, when cicatrization was complete, prove less satisfactory. A fortnight after the operation there was only a very slight discharge at the angle of the wound, the latter having almost all healed by first intention. One month after the amputation, the stump was as round as a ball; it offered a perfect model of its kind, and Mr. Avery expressed the opinion that it was quite impossible to get so ample and good a flap anteriorly, by the ordinary method of transfixing and cutting from within outwards, as had been obtained in this instance by Mr. Luke's method.

The objection sometimes brought against the ordinary flap operation, and which would hold good against Mr. Luke's, is that the wound made by the knife is much more extensive than is the case with the circular amputation. But as with chloroform we have no shock, and since the amount of the suppuration is pretty nigh the same in both operations, the objection falls to the ground; the more so as it is proved that when the flaps are well made after Mr. Luke's plan, there is much

chance of union by first intention, and the immense advantage of a firm, round, and healthy stump.—*Lancet, Aug.* 28, 1852, *p.* 193.

76.—*Case of Gangrene of the Foot from Exposure; Amputation of both Legs; Recovery.* Under the care of S. SOLLY, Esq., Surgeon to St. Thomas's Hospital. [Senile gangrene is well understood both in its pathology and treatment, but any observations upon gangrene attacking the extremities of the young, may be of advantage. In the young, the pathology seems to be obliteration of the arterial trunks. In the old it is from ossification of the vessels.]

How is the obliteration brought about in the young? Mostly, if we do not mistake, as a consequence of arteritis, the vessel becoming plugged up with the fibrinous exudation excited by the inflammation of its coats. And here some analogy is seen to exist between gangrene of the feet and softening of the brain; for in both cases does the disorganization of the whole or a portion of the part affected, depend upon a diminished or totally arrested supply of arterial blood.

But a new field has, on this head, been lately opened by Dr. Kirkes, who has submitted his views to the Medical and Chirurgical Society, in a very important paper, on the 25th May, 1852 (the Lancet, June 5, 1852, p. 542). Dr. Kirkes thinks that by actual cases, post-mortem examinations, reasoning, and analogy, he has established that—"1st. Fibrinous concretions on the valves of the heart admit of being readily detached during life. 2d. That if detached and transmitted in large masses, they may suddenly block up a large artery, and thus cut off the supply of blood to an important part. . . . . 3rd. That the effects produced and the organs affected would be in a great measure determined by the side of the heart from which the fibrinous material had been detached; if from the right side, the lungs would bear the brunt of the secondary mischief; but if, as was most commonly the case, the left valves were the source, the mischief would be more widely spread, and might fall *on any part*, but especially on those organs which were largely and directly supplied with blood from the left side of the heart, as the brain, spleen, and kidneys." We do not allude to Dr. Kirkes' ideas as to the possibility of phlebitic and typhoid symptoms being excited by the fibrinous *débris* getting into the circulation; for we desire to centre our attention upon the subject in hand, and inquire whether the plugging of the main arterial branches of the lower extremities might not sometimes be occasioned by fibrinous masses derived from the heart, independent of ossification or arteritis.

If Dr. Kirkes' theory be admitted, as regards the brain, spleen, and kidneys, it may without violence be extended to the distal portions of the lower extremities, the more so as Dr. Kirkes has found, in some of the cases which are mentioned in the paper, the iliac arteries firmly clogged. Though these very ingenious views are not yet supported by actual proof, they certainly deserve the attention of the profession, both as to the important effects suggested by the author, and as bearing upon the disease under consideration—viz., gangrene of the feet in young subjects. Dr. Kirkes deserves great credit for his patient labours, and it will be as well when we come in contact with cases like the one which he relates, to inquire minutely into the history of the patient, dwelling especially on the rheumatic or cardiac affections which he may have experienced.

The treatment of spontaneous gangrene in the lower extremity seems completely settled, and all surgeons agree that it is proper to wait until a line of demarcation is formed, so as not to run the risk of having a stump with diseased arteries. But we have seen, in some instances, the sphacelated parts ulcerate away completely, and the stump formed without the intervention of the surgeon's knife. There is, we fear, a certain amount of risk in adopting this course, for the long process of separation between living and dead portions of the limb lays the patient open to that fearful complication known under the name of purulent absorption. Nor is this all, for the noxious gases resulting from the decomposition may be very baneful, both to the patient himself and to his fellow-sufferers in the same ward, and thus do incalculable mischief. The surgeon has therefore to use his powers of discrimination—and seize upon the moment when the line is sufficiently marked to leave no doubt upon the soundness of the vessels above, and amputate a little beyond the ulcerated points.—*Lancet, June* 19, 1852, *p.* 590.

ORGANS OF CIRCULATION.

77.—ON TREATMENT OF WOUNDS OF THE PALMAR ARCH.

By Richard G. H. Butcher, Esq., Surgeon to Mercer's Hospital, Dublin, &c.

[From the writings of Sir Astley Cooper, we find that in cases of this kind he recommends steady and continued pressure on the brachial artery. If this fails, he says it may be necessary either to secure the radial or ulnar artery, or both. Mr. Liston recommends us to enlarge the wound, and tie the vessels divided above and below. If inflammation and sloughing come on, then the humoral must be tied; because if both the radial and ulnar are secured, bleeding will still continue from the interosseous communication. Mr. Skey's opinion is, that the trunks of the radial and ulnar should be tied above the wrist. This was the opinion of Mr. Abernethy also. Mr. Butcher now draws attention to a case which came under his care. It was that of a strong athletic man, aged 30, who was admitted into the hospital June 6th, 1852, bleeding profusely from the right hand. The wound was inflicted by a penknife, which had been thrust deep into the palm,—three-quarters of an inch internal to the cleft between the thumb and index finger. Mr. Butcher proceeds:]

I was in the hospital when the patient was admitted; he was then evidently losing a large quantity of blood; he was blanched and excited. Before removing finger pressure from the wound, I directed an assistant to make pressure on the radial and ulnar arteries above the wrist. On exposing the cut, the blood issued, not in a jet, as in the first instance, but in a rapid continuous stream, of a bright scarlet colour. On drawing aside the lips of the wound, the bleeding extremities of the vessel could not be seen at all; the finger of a second assistant was again placed so as to act temporarily on the bleeding artery, and I proceeded to treat the case by pressure. Each finger was separately rolled with a narrow bandage from its extremity to its articulation with the metacarpal bone; the thumb was similarly treated; then, even, flat compresses of folded lint were adapted to every part of the palm of the hand, excepting to the extent of a half-crown piece, the centre of which was the wound; this space was left for special pressure, and applied in the following way:—The finger being cautiously removed from the divided artery, a very small dossil of lint was pressed into the wound so as accurately to take its place; over this another and another, each larger than the former one, until a well-adapted conical compress not only filled the wound with its apex, but was elevated by its base a few lines above the surrounding integuments. When so adjusted, not the slightest oozing appeared; a roller was then put on so as to steady and maintain the compresses in the palm, and carried up to the wrist, where an oblong compress of lint was placed over the radial artery, and a similar one over the ulnar vessel, and retained with such force as to moderate, but not to arrest, the amount of blood circulating in these vessels. The same roller was continued up to the elbow, maintaining all along equable support. A splint was then adjusted along the anterior aspect of the limb, and retained by bandage, extending from the elbow above to the anterior extremity of the first phalanx of each finger; it was wide below, so as to give the entire hand support, at the same time it was padded in a peculiar way, the wadding being much thicker, and presenting a convex surface, to fill up effectively, together with the compresses already applied, the hollow of the hand. By this adjustment the fingers were slightly flexed—a position most desirable, as relaxing the inferior attachments of the palmar aponeurosis, and permitting the compressing pad to lie undisturbed by direct contact with the cut artery. The patient was confined to the horizontal posture in bed, with the limb well raised.

[After enlarging upon the advantages of this position in cases of these and similar injuries, Mr. Butcher continues:]

June 7th, ten a. m.: There has not been the slightest oozing of blood from the wound; neither is there pain nor tension referrible to any part. The patient had a full opiate on last evening, and afterwards quiet rest through the entire night.

9th. There has been no return of hemorrhage, and the hand is free from pain.

10th. Removed this day the splint and bandages, save those applied to the

fingers; also the graduated compress, except the dossil of lint which constituted the apex of the cone, and which lay in the wound, adherent. You must bear in mind, even this scrap of lint was not tinged with blood externally. It was suffered to remain undisturbed, for the slightest force offered to it would be capable of tearing open again the recently agglutinated vessels. The compresses over the radial and ulnar arteries were not stirred, the object of their application being, as you already understand, to diminish the weight of the column of blood thrown upon the divided extremities of the artery. The compresses in the palm, the splint, and bandages were all replaced, with a pressure equivalent to that used in the first instance.

12th. Permitted the patient to sit up, and move about the ward, with the limb supported in a sling.

18th. Reapplied bandages, splint, and the compresses in the palm as before; left undisturbed the piece of lint in the wound, it being still adherent; adopted a like precaution as on the 10th, of not disturbing the pads over the radial and ulnar arteries.

22nd. Removed the compresses from the palm of the hand, and this day detached the piece of lint, which adhered so pertinaciously in the very bottom of the wound, by a continuous stream of tepid water directed upon it for a few moments. The radial and ulnar pads were not taken away. After this a light compress was again placed over the wound, the fingers left bandaged, and the pads supported by splint and rollers as before.

25th. Removed all dressings to-day; the wound quite healed; the compresses over the radial and ulnar arteries were dispensed with, as likewise the finger bandages. Merely put on a small compress over the wound, and steadied the limb on a splint as before.

29th. Removed all dressings, and dispensed with all further applications; motions of the hand unimpaired.

This case, then, affords a good example of what can be accomplished by compression. In order to have it effectual, there are certain essentials upon which I would lay great stress; and *first*, the relaxation of the palmar aponeurosis. Most of you are aware of the resistance and density of this structure, and how completely it covers in, secure from displacement and from pressure, the complicated and delicate arrangement of parts lodged in this region, the superficial and deep arches of arteries and nerves, the minute ramifications of veins, together with the superficial and deep flexor tendons enveloped in their fine synovial bursæ, how that this fascia is intimately attached above to the anterior annular ligament, and in fact constitutes its superficial layer, and has fused into it the tendinous insertion of the palmaris longus muscle. Passing from this origin, and expanding as it closes in the palm, it gives off a fascia from its outer margin to cover in the muscles of the thumb, while from its inner is detached a similar process to invest the muscles of the little finger; while inferiorly, it divides into four fasciculi, which split, each becoming forked and inserted into either side of the sheaths of the flexor tendons and into the capsular ligaments of the first phalanges. These diverging slips are held together by transverse aponeurotic bands, which prevent their divarication. Sent off from its deep surface are two strong septa, which join the interosseous fascia, and isolate the middle of the palm from the internal and external lateral portions. The superficial and deep surfaces of the palmar aponeurosis are strikingly different; the superficial surface is rough and uneven, owing to the detachment of tendinous fibres to the thickened and hard skin covering it, and to the compact and granular fat interposed, and which must be borne in mind as considerably embarrassing the surgeon and forming one of the difficulties to be encountered in securing the ulnar artery below the annular ligament. The deep surface of the palmar fascia, on the contrary, is polished and shining, with a thin layer of fine reticular cellular tissue lying between it and the subjacent parts, and which must be remembered as affording an arrangement most susceptible of infiltration. You can understand now, from the anatomy of the fascia, the necessity of slightly flexing the fingers, so as to relax it, and thus permit the first bit of the compress to be placed effectively in contact with the divided artery. By this relaxation a comparatively slight amount of pressure will stay the current from the bleeding vessels. You readily perceive that, by

extending the fingers, the fascia is made tense and must lift up the compress, thus allowing the blood to pass into the fine reticular tissue and engorge the hand. *Secondly*, in order that pressure should succeed in other cases as satisfactorily as in the one before us, besides relaxation of the palmar fascia, it must be had recourse to early, before any obstacle in the way of clot is interposed between the bleeding artery and the compressing agent. It must be employed evenly over the entire limb, maintaining an equable support from the extremities of the fingers to the elbow. The stream through the radial and ulnar arteries must be diminished in volume by compressing their walls in the manner you have seen, and the elevated position of the limb must be maintained for the reasons which I have already assigned. I have mentioned to you that I visited the patient in a few hours after applying the compression, and with what object?—to see if the compress was at all stained with blood. If so, I would have removed at once all the dressings, I would not employ pressure again, being impressed with the conviction, that it was put on as accurately as could be, and had failed in the trial; and I would not risk by repeated hemorrhages the engorgement of the hand and the alterations of the natural appearances of the parts. I would have dilated the wound, and tied the artery above and below. You can dilate the wound without injury to the parts lodged in the palm of the hand—that is, when the superficial arch is the part implicated, by the following method. It is a mode which you have frequently seen me practise in cases where matter has formed, either in this region or in the sole of the foot. You take a director and bend the lower two inches of it in this manner, pass it into the wound (or in the case for the exit of matter make a small opening for it), and having got beneath the fascia, press the point of the instrument close up to its under surface, so as to lift as it were the fascia from the parts behind; a very slight onward movement will separate the cellular tissue, and nothing is interposed between the groove of the director and the fascia, so that it can be easily slit upwards. The director may then be applied in a similar way in the direction of the lower extremity of the artery, and the knife used. The edges of the wound thus formed can be readily drawn aside, and the cut extremities of the vessel will with facility be secured. Now this is not the case when the surgeon makes a direct incision from without down on the bleeding artery; parts are very frequently cut which should not be, and add very considerably to the difficulties of finding the vessel. I, too, like Mr. Skey, have seen an experienced surgeon baffled in his attempts to tie the bleeding points by direct incision, and compelled to secure the radial and ulnar vessels.

The size of the wound will very materially influence the mode of practice to be pursued. If a large one, I would have you at once proceed to secure the cut extremities of the artery, and still further, even dilate, to accomplish this object; for if the parts in the hand are extensively injured, the additional incisions required by the surgeon, in most cases, will be but trifling, and not tend more seriously to compromise the result, in regard to the after functions of the part. Again, pressure cannot be depended on with the same certainty when employed over a large wound: sloughing and secondary hemorrhage are almost sure to follow.—*Dublin Medical Press, July* 14, 1852, *p.* 17.

78.—*On the Treatment of Epistaxis.* By M. Reveille-Parise.—M. Reveille-Parise observes that it is very desirable to be in the possession of a simple means of arresting epistaxis when severe. Plugging is not the simple operation it has been described; it is very tedious, and often excites vomiting or sneezing, which aggravates the bleeding. Moreover, we may not have any appropriate instrument at hand.

He has found three means of great utility:—1. Alcohol, applied upon dossils of charpie, is a most energetic styptic. It causes a strong or even a temporarily painful sensation, and often speedily checks the bleeding. The essential point is, before passing in the alcohol, to dry the nostril well by blowing the nose, and by charpie. 2. Equal parts of powdered gum and alum may be blown into the nares, and dossils rolled in the mixture then applied,—a magma, which arrests the hemorrhage, being speedily formed. Before removing the dossils they require to be

well moistened with tepid water when the bleeding has quite ceased. 3. The best of all means is, however, the application of carded cotton-wool; and it is surprising that surgeons have hitherto made so little use of this hemostatic agent. After the nostril is well dried, dossils of pure clean cotton should be passed in, until it is filled. They must not be too tightly rolled, or the blood cannot penetrate the interstices,—nor too loosely, or it will do so too easily, and the hemorrhage will continue.—*Bulletin de Thérap.*—*Medico-Chir. Review, Oct.*, 1852, *p.* 547.

79.—SPEEDY CURE OF A LARGE ERECTILE TUMOUR OF THE NECK, BY INJECTION OF AROMATIZED WINE.

By Prof. Riberi.

At the Scientific Congress, which met at Turin, in 1840, Dr. Riberi made a communication respecting the great benefits he had derived from vinous injections, in erectile tumours or *nævi materni*. He preferred these to any other substance that had been recommended as an injection. Although in the case of large tumours the injection had to be repeated at intervals, in different parts of the tumour, yet the cure was effected with little pain, and without leaving a cicatrix. The chief inconvenience was the length of time required; so that the ligature, excision, or caustic, might be preferable whenever the tumour had a large base, and the deformity left was not visible. When this last was to be feared, as on the face, the injection was preferable. On many occasions, injections have been employed with success, when the whole substance of the lip was implicated; but in other cases, the ligature has proved just as useful, and more expeditious. Soon after the injection, the tumour becomes reddened, and the seat of a true phlegmon, which is, however, of short duration, and gradually subsides, the skin recovering its colour, though never assuming quite the natural condition. After this change in the tumour, the surgeon may be certain that it will not continue to increase; and it has lost the spongy or cellulo-vascular disposition, which was one of its chief anatomical characters. Sometimes the inflammation proceeds beyond the adhesive stage; and ulceration, which delays, but does not prevent, the cure, takes place. In some large tumours, the conjunction of other measures, as the partial ligature, caustics, &c., with injection, has been found useful. Since 1840, Professor Riberi has treated many other cases with the vinous injection, and with increased confidence in its efficacy. He selects one of these for narration, as being the most striking example he has yet met with, from the deep extension of the tumour, and the rapidity of its cure.

Maria Cedrino, æt. 46, a countrywoman in robust health, applied at the clinic on account of a tumour on the right side of the neck. It was the size of a turkey's egg, colourless and painless, and its base penetrated amidst the muscles and large vessels of the neck. By uniform pressure it could be made to disappear, re-appearing again gradually when this was removed. It had remained stationary for some time, when a quack having punctured it, hemorrhage ensued, to arrest which the actual cautery was required, Since then it had much increased in size. After steadying the neck and the tumour, this was punctured at its centre, by means of Anel's syringe, having the pipe-needle so shaped that it might readily penetrate, and wine aromatized by aromatic herbs was injected. The tumour at once became tense and hard, and bladders of ice were laid upon it. Considerable inflammation followed, so that a bleeding was deemed necessary. By the use of the ice and a low diet all this subsided, and the tumour rapidly diminished in size—so that by the seventeenth day it was no larger than a pea, and the patient was dismissed. She was seen a year after, and continued quite well.

In a note appended to the case, Professor Riberi takes a comparative view of the different procedures adopted for the treatment of erectile tumours. 1. The practice of tying the arteries supplying the tumour with blood, and thus arresting its nutrition, has been declared useless by the general experience of surgeons, except in the case of erectile tumours in the cavity of the orbit, and perhaps of the temple. 2. Other modes, as vaccination, acupuncture either simple or with heated needles, injections, issues over the tumour, and the seton, act by inducing inflammation, which changes the anatomical characters of the texture in the

tumour, and leads to its resolution. Vaccination, however, only answers this end in very small tumours, and its sphere of action is therefore very limited. By acupuncture practised with many needles, a cure is not always obtained, and when it does result, it does so only after a very long period; and the practice of employing heated needles has not succeeded in the author's hands. Of injections he has already stated his favourable opinion. Issues applied over the tumour produce no effect, or only after a very long period. Nearly the same may be said of the seton, while from the use of this means, the author has known excessive inflammation and febrile reaction to result. 3. Other modes, as compression, and to a certain extent, astringents, accomplish the *denutrition* of the tumour by causing expulsion of the blood and adstriction of the vessels. Compression, however, by inducing some inflammatory action, operates in a mixed manner. Astringents are of little efficacy, and act as mere adjuvants to other means. Compression is long and tedious in its operation, difficult, and often impracticable in application, and always uncertain in its result. In one case Dr. Riberi employed it with great advantage, before he was aware of the utility of injections. It was an erectile tumour, which spread out from the orbit of an infant over the forehead. Pressure was continued for a year and a half, with the effect of quite dissipating the tumour, and wearing down in part the superciliary ridge, which, however, was restored to its usual appearance in three months afterwards. 4. Another mode is the minute breaking-up of the intimate tissue of the tumour by a cataract-needle, and then employing pressure and astringents to secure its dispersion. The facts are too few to allow of an opinion being delivered upon this method. 5. Finally, other modes, as excision, caustics, and the ligature, have in view the extirpation of the texture. Excision is the most speedy means of effecting this; but the fear of hemorrhage, so alarming at the tender age at which these tumours usually occur, deters most practitioners from its adoption. Of the efficacy of both the actual and potential cautery, the author has had many opportunities of assuring himself; but the ugly scar they leave behind constitutes a great objection to their use. The ligature is much more extensively applicable. Of 28 cases occurring in 8 years, Dr. Riberi applied it with complete success in 25. In treating nævi with a broad base, instead of employing a double ligature, so as to tie each half of the tumour with one of these, the base of the tumour may be transfixed by two needles placed crosswise, and a circular ligature applied beneath them, they serving as points of support for it. In place of the needles, Dr. Riberi has been accustomed to employ here, as also in tying hemorrhoids, two strongly-curved hooks. It is surprising how much more readily the operation is performed by their aid, especially when the tumour is situated within the cavity of the mouth. In those cases in which the erectile tumour has a long, narrow base, the quilled suture may be employed with great advantage. There are, finally, certain erectile tumours, which, from their position or size, require to be treated by two or more of the above-mentioned means.—*Medico-Chir. Review, Oct.*, 1852, *p.* 449.

ALIMENTARY CANAL.

80.—ON A CASE OF COMPLICATED HARE-LIP, AND THE METHOD OF TREATING IT.

By Richard Quain, Esq., F.R.S.

[The operation was conducted with few exceptions in the ordinary way, but Mr. Quain derived essential assistance from the supporting spring, which has lately come into use.]

This encircles the head from behind, and the two ends, furnished each with a pad, rest upon the cheeks, which are thereby supported in the position given to them. All dragging or stress upon the suture is thus prevented; and pressure upon the lip, whether from the bones behind or otherwise, is guarded against.

This object is so important in such a case as that now under consideration, that a few more words respecting it will not be out of place.

Very many years have gone by since the need of support to the cheeks in aid of

the suture in treating certain cases of hare-lip was perceived by surgeons, and attempts were made to effect the object. The bandage variously disposed was generally resorted to; but other expedients were likewise used. Several of these are noticed in the "Memoirs of the Academy of Surgery" of France; and in one of the essays in that most valuable publication it will be found, that an able surgeon, Louis, went so far as to put aside the pin as the means of union in hare-lip, substituting for it a systematically arranged, and not a little complicated, "uniting bandage," with, however, a single point of thread suture. This system fell rapidly into disuse, but the bandage was still continued in aid of the twisted suture, especially by continental surgeons. The bandage was made to encircle the head and face, crossing from the occiput alternately upon the lip and forehead, and supporting compresses upon the cheeks. It is well represented *in situ* in Desault's Journal. In one case Dupuytren included the nose likewise in a slit of the band. (Leçons Orales, T. IV., p. 102.) But the bandage is liable to the serious objection, that pressure is made thereby upon the lip, and that discomfort is occasioned by interference with the nose and mouth. These objections do not apply to the spring; and I may observe, that the advantage of such a means of supporting the parts did not escape our predecessors. More than a century ago (1721) an apparatus of that kind was recommended by a practical surgeon. (See "Verduc, Traité des Operations de Chirurgie," p. 218.) The suggestion in this treatise is to place the spring above the head, with the ends resting upon the cheeks. The use of this instrument was, however, objected to by several of the leading surgeons of the last century, and it fell at once into disrepute, although the objections appear to have been merely theoretical. (See, among others, De la Faye, "Mem. de l'Acad. de Chirurgie," Tome I., and Le Dran, "The Operations of Surgery," Gataker's Translation, p. 345.) Yet the thing itself seems obvious enough. Heretofore, I myself, before I had seen Verduc's proposition, applied to more than one surgeons' instrument maker to construct a spring with a view to another difficult case; but they did not succeed in making a useful instrument. The original of the spring used in the present case was constructed for his own child, a few years ago, by an artisan whom you have seen from time to time in the hospital. He had, be it observed, the object to be attained constantly before him, as well as the model for trying the effect of the apparatus; and he succeeded remarkably well, without too, I believe, any suggestion save from his own observation and sagacity. The spring constructed by this ingenious person is useful in most cases, and is of great value wherever the deformity is extensive or complicated.—*Medical Times and Gazette, July* 31, 1852, *p.* 106.

81.—ON MATERIALS THE BEST ADAPTED FOR FILLING THE TEETH.

By William Robertson, Esq., Birmingham.

Pure and well-prepared gold leaf is undoubtedly the best and the most durable material which has yet been discovered for filling the teeth, and particularly so when the operation is performed in the early stages of decay, and before the slightest tenderness has been felt in the tooth. I should therefore recommend gold to be used in all cases where it is practicable, in preference to any other filling. But we have numerous cases which present themselves where gold cannot be used, and where an amalgam becomes a necessary substitute.

It too often happens that filling is neglected until decay has made considerable progress; the cavity having become large, the surrounding walls thin, and the tooth so tender as not to admit of the pressure necessary to condense the gold into a secure and solid plug, without the risk of producing pain or splitting the tooth.

There are also various cases arising from the position of the decayed parts, and the shallowness or saucer-shaped form of the cavity, where a gold filling would not remain, and where it becomes necessary to use an amalgam. The consideration then is, what materials are the best to form this amalgam?

I have given much time and labour to the investigation of this subject, and

after numerous experiments with the various metals, have come to the conclusion that gold, silver, platina, and tin, in their pure state, are the best; because I have found in using them, either separately or combined, that they resist the acids of the mouth better than any of the other metals.

An amalgam of these, however, cannot be formed without mercury, but the smaller the portion the better, so that there shall be just sufficient to unite and hold in permanent combination the purer metals above specified.

The amalgams in general use, even those of the better class, which are composed of the metals above mentioned, contain a great deal too much mercury; and I shall presently show that the cause for this superabundance of mercury arises from the incorrect proportioning of the metals, and the improper mode of mixing them. The method generally adopted in preparing an amalgam is to combine the mercury at once with the other metals, so that the compound may be ready for using, and when a portion is required it has to undergo a process of heating and rubbing, to bring it back from its crystallized form to a pasty state before putting it into the tooth. Instead of adopting this method, the mercury ought to be kept separate from the other metals, and only mixed with them at the time of using. This mode of mixing, with the metals rightly proportioned, will produce a harder and more durable filling, and the metals will combine with *one-third* of the mercury required in the former mode of preparing the amalgam.

As an illustration of this fact, even in the better class of amalgams, I may refer to a paper that appeared in the 'Pharmaceutical Journal for March, 1850,' on 'Amalgams for Stopping the Teeth,' by Arnold Rogers, Esq. "I have much pleasure," he says, "in communicating, through the Pharmaceutical Society, a few remarks on amalgams, as well as the formula for the one I have used for some years, and though occasionally some specimens have come under my observation which seemed to possess qualities superior to the general character of amalgams, yet, on the whole, I have been satisfied with my own compound. Not but that I think it may be improved upon, and, when leisure will allow me, I shall endeavour to profit by the hints and communications of my professional brethren."

After a few remarks on various amalgams, Mr. Rogers proceeds to point out the method of preparing his own. And first, an amalgam is composed of silver one part and mercury four parts. This amalgam of silver is to be united with an amalgam of gold, which consists of gold one part and mercury three parts. These are to be kept in separate boxes, and when used the proportions are to be two parts by weight of the gold amalgam to one of the silver: thus making the amalgams, when combined, to consist of silver one part, gold two parts, and *mercury two parts*. Then as to the manner of using it. "The two pellets had better be triturated thoroughly in a mortar before the compound is submitted to the flame of a spirit-lamp; and I have observed," he says, "that for the better incorporation, it is necessary to submit to heating and trituration in the usual way three or four times. The cavity of the tooth being quite prepared for the reception of the amalgam, all the mercury that can be pressed out between the thumb and fingers should be so separated, and the compound immediately packed in the cavity."

Now I feel persuaded that Mr. Rogers will agree with me as to the desirability of getting rid of a portion of that mercury, and I shall presently show that by using the same metals with the addition of another metal, and by proportioning them, and by preparing the amalgam differently, we shall be enabled to dispense with *seven parts of this mercury out of the ten.*

Some dentists use an amalgam of palladium and mercury, which makes a firm and durable filling, but it becomes black in the tooth. A few years ago cadmium was introduced as a filling, and for a short time it promised well, and appeared to be an improvement upon former amalgams, but after a few months' trial it showed its defects, and has very properly been discarded. It neither retained its colour nor its hardness, for when acted upon by the friction of the opposing teeth it soon wore away, and when not acted upon it became, in parts, yellow as saffron, with the disadvantage also of having a strange tendency to produce galvanic action in the mouth. Objectionable as this compound is, it still continues to be used by a certain class of practitioners, under the title of "Parisian filling."

There are various kinds of amalgams used by the same class of individuals, which contain copper, lead, bismuth, zinc, and antimony, all of which are injurious. To test an amalgam properly is a work of time—a few months is not sufficient—years of observation are required to ascertain its real character and to judge of its utility. Its introduction to the public ought, therefore, to be the act of an experienced member of the profession, for it becomes rather a serious matter if we find that the filling we may have been using pretty freely for six or twelve months, upon the strength of another's recommendation, should result, like the cadmium preparation, in a complete failure.

The amalgam which I am about to describe contains nothing novel so far as the materials are concerned. There are no new metals introduced; they have all been used, in different forms, for many years, but it is in the proportioning of them, and by a different mode of preparing the compound, that I have been enabled, of late years, to get rid of two parts out of the three of the mercury formerly required; and this I consider to be an important advantage, for, as I have before said, an amalgam cannot be formed without mercury, but the smaller the portion required of this the better.

Since making this change, I have had ample time (upwards of three years) to test the merits of the compound, and can, therefore, speak practically of its utility.

The amalgam consists of gold, one part; silver, three parts; and tin, two parts; and it is of the utmost importance that the metals should be pure, free from the smallest particle of alloy.

The mode of uniting the metals, is, first, to put the gold and silver into the crucible, and just as they are at the point of melting, add the tin, which requires less heat than the former metals. When they become melted, but not overheated, pour them from the crucible, melt them a second time, for the purpose of having them properly mixed, and then pour them into an ingot of a shape adapted for reducing the compound into the finest powder.

The mercury is to be kept apart from the powder, and mixed with it at the moment the amalgam is to be put into the tooth. The mercury must be perfectly pure, and the quantity required will be equal in weight to the powder; and here, it will be perceived, we get rid of seven parts of the mercury out of the ten before mentioned.

In mixing the powder with the mercury, the exact proportions of each can be ascertained to the greatest nicety, and by a very simple process, which will save time and materials, and which makes a harder compound, than by using a larger portion of mercury, and squeezing part of it out again.

A measure for the mercury may be made from a square portion of ivory, by drilling in it three holes; one may be made to contain four grains, the second eight grains, and the third twelve grains. The mercury to be poured into any one of these, as more or less may be required to fill the cavity of the tooth, and by drawing the finger across, so as to bring the mercury on a level with the surface of the ivory, the portion wanted may be accurately obtained.

The measure for the powder is equally simple and convenient. It is a metal tube, with a handle attached, calculated to hold four grains, which is also got to a nicety by filling, and then drawing the finger across the mouth of the tube, so as to make level measure.

The mercury should be kept in a small bottle, with an India-rubber tube attached to its neck, and the mercury is readily passed through the tube into the measure. In this way the exact quantity of each of the metals is readily obtained.

The powder and mercury to be emptied from the measures into a glass mortar, and rubbed till they become mixed. The compound is then to be rubbed firmly with the finger in the hollow of the hand, till converted into a paste, which, before hardening, allows plenty of time for insertion into the cavity of the tooth.

I have found this compound to be far superior to the former class of amalgams. It does not, like palladium, and some of the other metals that have been used, become black in the mouth. It retains its hardness and firmness, and is not, like the cadmium, liable to be worn away by friction of the teeth.

Formerly, in fixing artificial teeth upon a gold plate, it was necessary to avoid bringing the gold in contact with a tooth filled with amalgam, because a portion of the mercury united with the gold and injured it. This evil is now remedied by the compound containing so small a quantity of mercury, which is held in permanent combination with the other metals, so that not a particle of it is abstracted by the embrace of a gold clasp. With these important improvements upon former amalgams another advantage is, that it is used with much greater facility.

From experiments which I have made during the last twelve months, I find that the portion of mercury which I have named can be reduced still further, and which I believe will be an improvement upon the present compound; but as I have before stated, more time and practical experience to test the result of even this alteration, is desirable, before taking the responsibility of giving it to the profession.—*Pharmaceutical Journal, June* 1, 1852, *p.* 566.

82.—ON CAUTERISING THE DENTAL NERVE.

[Dr. W. A. Roberts, before the Edinburgh Medico-Chirurgical Society, described the following process for effecting this object. He says:]

The method of applying the actual cautery which I have now to explain, was suggested to me by my friend Dr. Strachan, of Dollar, who had seen the article in the 'Lancet,' vol. i. for 1851, p. 546, in which a proposal was made for excising tumours, &c., by means of wire brought to a white heat by electricity. I have followed up the idea; and the instrument on the table is the result. After several experiments, I found that "Grove's" battery answered best, being more convenient than "Smee's"; it is much smaller, and consequently more portable and more easily kept out of sight. By this one pair of plates I can produce a more decided result than I could arrive at with six pair of "Smee's." In the porous jar I have a mixture composed of two parts of nitric, to one part of sulphuric acid. In the glass jar there is a mixture of four parts of water to one part of concentrated sulphuric acid. At the end of each of the conducting wires, you will observe a fine platina wire brought to a point. This wire is fine enough to enter the foramen of any tooth, and if required merely to cauterise the larger cavity of a decayed tooth, it can be easily rolled up to act as a small ball. When the wire is to be heated, the communication is made by gently pressing upon the ivory knob while pressing down the spring; the contact is made instantaneously; by taking off the pressure, the current is broken off as quickly. I found some difficulty at first in operating, from the want of elasticity in the wires, as the thickness necessary to convey sufficient quantity of the electric fluid to heat the platina wire to a white heat, rendered them very unwieldy. This has been got over very ingeniously and satisfactorily by a plan of my son's, which consists in filling two small India rubber tubes with quicksilver, the ends of the copper wires being inserted into the mercury at both ends, and tightly tied; by this means the communication is rendered complete, and allows of free motion. Since this was done, we find now full freedom can be obtained by having a bundle of very fine wire tied together instead of a single thick one.

The advantages, then, to be obtained by this instrument are, its easy application to the desired spot in the mouth, and that perfectly cold, instead of alarming the patient by holding a red-hot iron before his face. Its being at once raised to the requisite heat, and no more than the mere point of the wire used being hot. Its being at once cooled on simply removing the finger from the ivory knob; and lastly, there being no appearance of heat to alarm the patient.

When to be applied for the purpose of arresting hemorrhage, or the deadening of the dental nerve, the cavity should be first well wiped out with a piece of lint, and then the desired spot should be rapidly touched, so as not to come into contact with other parts. This can be repeated if necessary. The platina must be at least *red* hot, as it then acts instantaneously, and with little or no pain, otherwise it would cause much pain, and subsequent inflammation. I need not say with timid persons the inhalation of chloroform should be resorted to. I have used this form of the actual cautery with and without chloroform in many cases. I may instance

one case without the aid of chloroform. A young gentleman of about nineteen years of age, came to me to have the front incisor of the upper jaw stopped; and while engaged in scooping out the decayed bone, from the great pain he was suffering (although he tried to hide it) he fainted. I made him call next day, and applied the actual cautery; he felt, he said, almost no pain. The following day I stopped it with gold, and he is now quite free from any pain or uneasiness.—*Monthly Journal of Med. Science, Aug.*, 1852, *p.* 175.

83.—CASE OF STRANGULATED HERNIA.

By William Fergusson, Esq.. F.R.S., &c.

[The patient, an elderly woman, was brought into King's College Hospital, on the morning of the 24th April, with strangulated hernia of the right side. Symptoms of strangulation had commenced five days previously to her admission. The taxis having failed,]

An incision of about one inch and a half was made by the inner side of the neck of the hernia, by which the integument and superficial tissues were divided. Through this opening the finger was introduced upwards towards the femoral ring, when the hernia-knife was introduced, its cutting edge turned inwards, and Gimbernat's ligament was divided. A little firm pressure with the fingers was then applied to the tumour, and the hernia was reduced.

Now, I may mention, that when I first visited the patient on her arrival at the hospital, it struck me, from the appearance of the case, that the hernia could not be returned, and that an operation would be necessary. I was guided as much by the peculiar feel of the rupture, as by anything else. This was the reason why I made up my mind to operate at once, more especially as the usual measures, with the warm bath, had been tried. The patient readily consented; and under the circumstances it was not thought necessary to wait for the concurrence of friends and relations, who often interfere very improperly, and thus, by causing delay, render a case more dangerous than it really is. If we can gain the consent of the patient to undergo an operation which is to save life, it is by no means either necessary or proper to wait for the opinion of relatives or friends, if the delay of doing so should decrease the chances of recovery. Those of you who saw the operation will have noticed that it was different from that which is usually performed and recommended by surgical authorities. It is customary, both in hospital and private practice, when operating for femoral hernia, to make incisions more or less extensive over the body of the tumour itself. These incisions are of great variety: some make them in the shape of a Y, or T shaped, or in the form of an inverted T. Others make the incisions in the form of a cross; and, until lately, I have been in the habit of making my incisions according to the shape ot an inverted Y, having found, that, by means of this incision through the integuments, I could work most easily. Sometimes, indeed, I have been contented with making only a single straight cut. Now, most or all of these incisions have been carried over the body of the hernia itself, the usual object of the surgeon being to get to the middle of the tumour, divide the integument and superficial fascia, then open the sac and look at its contents, with the view of ascertaining in what condition the intestine is. After having done this, his next step was to feel for the most resisting point, by dividing which he might relieve the stricture. This was felt to be seated at different points. Sometimes the falciform process of the fascia lata formed it; or it may have been Poupart's ligament; but most frequently Gimbernat's ligament, one or other of which it was necessary to divide before the hernia could be returned into the abdomen. The last named structure has generally been selected on these occasions; and in doing this you can understand that the surgeon had to pass his finger or his director deeply down before he could reach this point; indeed he had to traverse a considerable distance with them; and during this process, it was not unfrequently found, that the intestine rose up on each side, and was liable to get wounded. Nevertheless, the operation was generally accomplished with success; but every now and then difficulties did arise, owing to the deep situation of the particular texture, especially if it happened that the tumour was very large.

Now, there are considerable differences in the operation which I performed upon this woman. In the first place, instead of laying open the sac, I reduced the rupture without interfering with it: in fact, did that species of operation which is now talked of as the operation for hernia without opening the sac.

This proceeding may be looked upon as of modern date; for, although it was described and recommended by Petit, Monro, and others, and advocated strongly by the late Mr. Key, it has been so little thought of by the generality of surgeons, that it is even now considered as a novelty; but, within the last few years, it has been brought prominently under the notice of the profession by Mr. Luke, of the London Hospital. Mr. Hancock has also written an elaborate essay on the subject. These two gentlemen, however, take quite different views about the matter. Mr. Luke strongly advocates the operation without opening the sac, whilst Mr. Hancock thinks unfavourably of the measure. I confess, on my own part, that hitherto I have not been able, from what I have read and seen, to give a decided opinion upon the relative worth of each proceeding; but I think the medium course is the safest and most proper for us to follow. It often happens, in surgery, unfortunately, as in other matters, that extreme views are entertained, perhaps to the disadvantage of essential points. I consider opening the sac, and not opening the sac, may be looked upon as extreme views. The most difficult and important points for the surgeon to decide upon are, the circumstances and conditions which should guide him in his practice. Those who advocate laying open the sac, say that the contrary practice is full of danger; and those on the other side say the same of the old operation. Now, we have proof enough to show, that there, in reality, is not much danger in laying open the hernial sac; and then we know, that it is unwise to return the intestine, in all cases, back into the abdomen, because it may be in such a condition, that, when returned, it will ulcerate and give way. However, I do not mean to go into this extensive question at length now; but shall content myself with saying, that I entertain a most favourable opinion of the operation without opening the sac; but yet, I do not think it advisable to adhere to this plan alone.

In the case under our consideration just now, the sac was not opened; but this was not all the peculiarity; the external incision was different. Some years ago, I should have made the inverted Y cut over the tumour, so as to expose well its surface. I should have cut down to the sac, then found my way to the stricture, thus travelling from the centre of the tumour over its surface to the inner edge; and I may say, that most surgeons would have followed this mode of practice. Instead of doing this, I made a small straight cut, about an inch and a half long, over the inner side of the hernial tumour. I did not meddle with the body of the tumour, but cut almost distinctly over Gimbernat's ligament, which I wished to touch. By this means, instead of having to work my way right over the tumour, I was enabled to get at the stricture at once, having to carry my finger through a comparatively shallow space. I did not care whether I saw the sac or not, but sought for the ligament, placed the edge of the probe-pointed bistoury upon its margin, and divided it, when, with a little pressure upon the tumour, the contents of the sac receded. Now, this I consider a most simple proceeding, and for it the profession are entirely indebted to Mr. Gay, of the Royal Free Hospital; and I think that it deserves much more attention than it has already obtained at the hands of practical surgeons. I have for the last few years rarely performed any other operation. The incision in the skin admits of the sac being opened, or not opened, as may be found advisable. I feel certain that those who see this operation performed will confess that there is some advantage in the proceeding over that which is usually done, both from the facility with which it was accomplished, and from the simple aspect of the whole process. I shall avail myself of other opportunities of calling your attention to this method, as I consider it worthy of your careful consideration; in fact, I should not be doing my duty as your teacher if I did not bring before your notice what I myself deem a very great improvement in connexion with hernia, as the proceeding referred to is really not much more than the simple operation of the taxis.

I will now advert to another point in this case, and that is, the early date at which the operation was done. In most cases, surgeons act upon the view, that it is their duty to apply all the usual means to facilitate the return of the hernia,

and prevent an operation. Now, this in the abstract is a good doctrine, not only in reference to hernia, but to other surgical matters as well; yet we may be over-punctilious in this respect; and I most conscientiously believe, that mistakes have over and over again been made by surgeons in their anxiety to prevent the operation for hernia. It is true, that surgical writers inculcate the necessity of resorting to the operation at an early period; but in practice, unfortunately, it is found that this doctrine is not carried out, the practitioner being almost insensibly led to resort to every variety of means but the operation. Prompt conduct on these occasions constitutes a striking difference between the practical and the book surgeon. In hospital practice, especially, there ought to be no delay, because, in the majority of cases which are admitted, it will be found that these various measures have already been resorted to; and, even in consultation practice, we shall often find the same thing, and shall have little inducement for delaying an operation.

I can say for myself, that I have never once regretted operating early, but that I have again and again had reason to believe that the patient has been lost in consequence of delay in trying measures to cause reduction of hernia without operation.

This leads me to tell you, that a very erroneous notion prevails as to the hazards of the taxis or the knife. Surgeons in ordinary practice rarely seem to calculate upon the hazard of the persistence of the hernia in a state of strangulation; they think seriously of the danger of the operation of relieving the stricture by the knife, but do not feel that there is considerable danger in squeezing the contents of a hernial sac in order to reduce it into the abdomen. Now, I believe there is often more danger likely to occur from the taxis than from the operation by the knife, because it is impossible to calculate what amount of pressure the parts will sustain without serious injury. The question, hitherto, has been between the taxis and the operation. This should not be so. Surgeons should consider what is the relative danger of the disease itself,—the hernia in a state of strangulation and operation. It should be borne in mind, that the state of the system induced by so serious an occurrence as a strangulated hernia, is accompanied by a vast deal of danger, and this hazard to life increases from hour to hour; for, from the bowel being confined by a stricture, the circulation is altered, and a perverted state of peristaltic motion is produced; and, if this is not remedied, changes occur both in the part strangulated and in the system at large, which are sure to bring about a fatal result. The dangers of the operation consist, in the first place, of the incision; in that there is no risk. Next there is exposure of the hernial sac or of its contents; but I have just observed, that in a great number of instances this need not be. There is also danger of hemorrhage, but that is so unlikely, that a good surgeon need hardly take it into consideration. There is a chance of wounding the intestine, but here the same remark may be made as respecting the fear of bleeding. Inflammation may come on after the operation and destroy the patient; but even this is a rare thing to occur. It is very true that persons do die after they have been operated upon, with all the signs of inflammation of the peritoneum; but nevertheless, this inflammation, in the greater number of cases, is not due to the operation itself, but has existed prior to it, and been produced by the agency of the stricture upon the gut. Of this I am convinced, after the experience of many cases which have fallen under my notice, in which operation had been performed without permanent benefit. It is my firm opinion that all these supposed dangers put together are far less than the single one which obtains from the persistence of a hernia in a state of strangulation; therefore, as a general rule, I advise you not to delay, but, after you have made a fair trial of the taxis, operate early. Do not put your faith in opium, because in one or two cases you have seen the symptoms subside after the administration of a powerful dose of this drug. It is an excellent remedy in certain instances, but these are few in comparison with those wherein it can be of no essential service.—*Medical Times and Gazette, Sept.* 4, 1852, *p.* 229.

84.—CASES OF HERNIA.

By Bransby B. Cooper, Esq., F.R.S.

[Mr. B. Cooper, in remarking upon the treatment lately recommended by M Malgaigne, not from any spirit of rivalry, but from what he considers due to himself, states, that he had devised the plan so far back as 1837. He endeavoured to convert irreducible into reducible hernia, by enjoining the recumbent position, maintained for a long time; the use of purgatives, and other lowering medicines; the application of cold to the tumour, and frequent gentle employment of the taxis. He relates the following cases.]

The first occurred in 1837. A gentleman, named W., came to my house to consult me respecting his son, a lad of seventeen, who was afflicted with an irreducible congenital hernia, which had become irreducible about two months before he was brought to me. During these two months he had twice suffered severely from obstruction in the descended bowel.

In this case I attempted to reduce the hernia by the taxis; but failing in this, I adopted the following treatment:—I first ordered an enema to empty the lower bowels; then a purgative pill at night, with a saline purgative draught in the morning. His bowels were freely opened by these means; but as the hernia still remained irreducible, I ordered that he should keep himself in the recumbent position, with his shoulders raised by pillows and his thighs bent upon the pelvis, so that the muscles of the abdomen might be perfectly relaxed; ice was frequently applied to the surface of the tumour; he was kept upon very low diet, with the bowels moderately open. This treatment was continued for nineteen days; nothing remarkable occurred during that time; but on the nineteenth day the hernia was reduced almost accidentally by the hand of the patient himself, who was feeling to ascertain whether the tumour had diminished in size. A truss was at once applied, and from that time I never heard that the hernia had descended again.

In 1838 a patient was sent to me by Mr. Hutchinson, of Witham, in Essex, with a large irreducible scrotal hernia; it had been irreducible about three months, during which time he had only once or twice suffered from any symptom of intestinal obstruction. The inconvenience arising from the size of the tumour was, however, so great, that he was very anxious to have any operation performed for its reduction. I recommended in this case a plan of treatment exactly similar to that last described; but in addition, as the patient was very plethoric, I ordered that he should first be bled from the arm; but either from fearing the restrictions required in my method, which I had explained to him, or perhaps from some reason connected with his avocation (that of a farmer), he did not at once submit himself to the treatment, although he at first appeared so desirous of doing so. After about three weeks, however, he placed himself under Mr. Hutchinson's care, and adhered to all my directions with the greatest exactness and patience. He lay for fifteen days, and on the evening of the fifteenth Mr. Hutchinson easily reduced the hernia by gentle taxis. A truss was applied, and there was never afterwards, to my knowledge, any symptom of the hernia again returning.

My late friend, Dr. Badeley, of Chelmsford, hearing of the result of the treatment in the last case, at the end of the same year sent me an old gentleman, who had had a scrotal hernia for four years. During this time his life had once been in great danger from protracted obstruction of the protruded bowel. I described to Dr. Badeley the treatment I had adopted in Mr. Hutchinson's case. I directed him to keep his patient recumbent, to freely evacuate his bowels, to apply ice to the tumour, and to limit him to very low diet. It was five weeks before the tumour became reducible in this case; it then went up suddenly as the patient was getting up out of a chair, in which he had been sitting while his bed was making. In this case, as in the others, a truss was put on at once, and, four years after, the patient told me that the hernia had never returned. I had subsequently a second case of this kind from Dr. Badeley, which was treated upon the same principle, and terminated equally successfully. I have published an account of this case in my 'Lectures on Surgery.'

In January, 1852, W. M., aged 29, a coal-porter, temperate, and in good health,

..as admitted into Guy's Hospital with an irreducible hernia on the right side of the scrotum. He stated that the hernia existed for six years; but that four days before he applied to be admitted the tumour suddenly became much larger, and that for three days he had suffered all the symptoms of strangulated hernia. When placed in the ward, an enema was administered, and he was put into a hot bath. By means of the taxis the freshly-protruded portion of the bowel was easily returned into the abdomen; but the old irreducible part still remained, not less than a goose's egg in size, as it had been indeed during the previous six years. I considered this an excellent case upon which to try my treatment for the purpose of rendering the whole reducible. I accordingly confined the patient to bed, and employed all the means I have already spoken of, and, besides these, in this case I prescribed small doses of blue pill and tartarized antimony. I have done this in many cases, and should always give slightly nauseating medicines when I had reason to believe that the hernial sac contained fat; but in this case I judged from the peculiar feel of the tumour, that a considerable quantity of omentum had protruded with the intestine; and the blue pill and tartarized antimony were given with a view of favouring the absorption of fat. This patient continued perseveringly to submit to the plan of treatment laid down for nearly four months, the tumour gradually diminishing; ultimately it went up with very little difficulty, and a truss being applied as in the other cases, the patient was discharged from the hospital, cured.

The conversion of an irreducible into a reducible hernia, is a matter of no slight importance. It is true that a person who is the subject of irreducible hernia may long continue in perfect health, but he is always in danger of the displaced portion of intestine becoming suddenly obstructed, and from its liability to injury from external violence, even after a very lengthened period.

[Speaking of the use of opium in strangulated hernia, Mr. Cooper says, that large doses of opium given in these cases, produce not unfrequently a precisely similar effect to that of the treatment of irreducible hernia detailed in the first cases.]

The opium seems to produce these effects by diminishing the irritability of the intestinal canal and checking vomiting, relaxing at the same time the constriction of the bowel by lowering the general tone of the muscular system. Under such circumstances the strangulated hernia will often become reducible, being brought under the influence of the constitutional remedy. In strangulated hernia I should always recommend the operation by preference, but it sometimes happens that patients will not submit to the operation; in that case I resort to the treatment with opium. Many of such cases have happened in my practice; some I have already published. I shall now relate two or three which bear upon the point in question.

In April, 1847, Mr. Berry, of Wilmington Square, sent for me to see a lady, aged 60, living at Pentonville, who, while reaching to a high shelf, was seized with a sudden increase of an old irreducible femoral hernia. I found her suffering from urgent symptoms of strangulated hernia. I attempted to reduce the freshly-descended portion of bowel by the taxis, but was unsuccessful; I therefore immediately recommended the performance of the operation, but the patient refused to submit to it. Under the circumstances I ordered her to take at once three grains of solid opium, two grains more to be taken in a couple of hours, should the symptoms remain unrelieved. The second dose was given, when the sickness gradually subsided, the tumour became flaccid and resumed its former size, the freshly-protruded portion of bowel having returned within the abdomen. The next morning the bowels were freely opened; a truss, with a hollow pad, which she had worn before upon the old hernia, was applied, and from that time she remained quite well.

This patient died of Asiatic cholera in the autumn of 1849.

Mr. Shelley, of Epsom (formerly my dresser), to whom I had spoken of the last case, was called in to a woman aged 40, who was the subject of a strangulated inguinal hernia, of three days' standing. She had constant stercoraceous vomiting. It was immediately proposed that the operation should be performed, but the patient declared that she would rather die; he therefore ordered her an immediate dose of two grains of opium, to be followed by one grain every two hours. The patient took eight doses, when the vomiting and pain ceased. An

enema was given, which operated freely, and on the evening of the second day from the commencement of the treatment the hernia was reduced by very gentle taxis.

In January, 1848, I was called to see the wife of a Mr. C., in the Hampstead-road; she was suffering from the symptoms of strangulated hernia. When I examined her, I found a small femoral hernia, which had descended for the first time the day before. I ordered the patient to be put into the hot bath, and to take calomel and opium to allay the sickness; also that the purgative enema should be administered immediately. I saw her again about ten hours after she had been treated as above. The sickness had then in some degree abated, but the bowels had not been relieved, and she was now suffering from retention of urine. I drew off the water with a catheter, and then proposed to perform the operation for the hernia; she determinedly refused to submit to the operation, and I therefore decided at once upon trying the opiate system of treatment. I ordered three grains of solid opium to be taken directly, and a grain every three hours until the sickness was subdued. The next morning I saw her about nine o'clock. She had taken three doses of the opium, the sickness had ceased, and the pain in the abdomen had also left her; the tumour itself was neither so tender to the touch nor so tense as before the opium was taken; and the urine had been passed without difficulty. I now ordered that ice should be applied to the tumour, and that another purgative enema should be given. At ten P.M., I called again and found that she had passed a good motion; she was also perfectly free from pain. I tried to reduce the hernia by the taxis, but could not succeed; I desired, therefore, that she should remain in the recumbent posture, which she did during the whole of the next day, the ice being frequently applied to the hernia.

On the sixth day from the time of the hernia descending she unexpectedly came to my house, to tell me that the night before the hernia had gone up by slight pressure from her own hand. Mr. Bigg, of Leicester-square, applied a truss, and the patient has remained quite well up to the present time.

Mr. Shelley, whose name I have already mentioned, knowing that I had employed in many cases the opium treatment I have been describing, sent me the three following cases, showing the result of the treatment in his own practice. I give them in his own words:—

"In October, 1849, I was called to J. S—, aged 38, a tall, strong man, by occupation a groom; he had been ruptured some years before, and then wore a truss for a short time, but as the hernia never came down, he soon left it off. On the morning of my visit he had again ruptured himself whilst lifting a heavy weight. He attempted to reduce the hernia, but could not succeed, and symptoms of strangulation coming on, he sent for me. I found a scrotal hernia on the right side, some sense of constriction at the epigastrium, and nausea. The hernia was very hard and tender at the neck. After trying the taxis for about an hour without producing any effect upon the tumour, I resolved to give opium. I gave three grains, and desired the patient to keep his bed. Four or five hours after, I again visited him. To my surprise, I found him sitting quietly by the kitchen fire. Upon my remonstrating with him for his imprudence, he replied that he was quite well now, for that he fell asleep soon after I left him, and when he awaked, he found the rupture softer, and tried to force it up. He succeeded without much difficulty; and I obtained a truss for him, which he still continues to wear."

"M. H., aged 45, a married woman. At her last confinement, which took place about four years previously, she had a very difficult labour. After this, she noticed a small lump in her groin, but as it was not always present, she did not notice it very particularly. According to her own account, she was seized with violent griping pain in the stomach one evening whilst sitting at work. This continued with great severity, causing her to be bent double and to press her stomach with her hands; about five o'clock next morning sickness came on, and became stercoraceous after two or three days. She was first treated with aperients, and afterwards with tobacco enema. The taxis was also tried, but altogether without success. On the fourth day, Dr. Lane, of Ewell, was called in, and suggested the exhibition of opium in large doses, as the woman obstinately refused to submit to the operation. The opium had the desired effect of subduing the vomiting and relieving the collapse, and on the fifth day from the commencement of the attack,

the rupture was reduced. The woman is now alive and well, but says she suffers from constipated bowels Ske does not wear a truss, although she says there is sometimes a small lump in the groin; but it goes back again."

"May 21st, 1851, I was called in by a neighbouring practitioner to take charge of a case during his absence. The patient was a short spare man, aged 50. Early in the morning he had ruptured himself whilst straining at stool; the taxis had been employed unsuccessfully for three hours. The hernia was about the size of a walnut, hard and tender, from manipulation; countenance anxious, with a strong sensation of constriction at the epigastrium. Opium was immediately recommended. I gave at first a grain and a half, and a half an hour after another grain and a half. Having ineffectually tried the taxis, I left the patient, ordering a warm bath to be prepared. I soon returned, and found him fully under the influence of the opium. The constriction at the epigastrium, as well as the retching, was relieved. The patient had been dozing, and indeed could scarcely be kept awake. I again employed the taxis, and in a few minutes returned the hernia. He slept off the effects of the opium, and was soon able to return to his work, wearing a truss."

The following case was also communicated to me by Mr. Shelley:—

"Dr. Butler Lane, of Ewell, about two years ago was called to see a patient who was suffering from irreducible hernia. He had been ruptured for some years, and always wore a truss. If ever the hernia descended, he laid himself down, and was soon able to reduce it. On this occasion, however, the hernia came down whilst he was lifting some straw, and the patient was unable to return it into the abdomen. After trying for some time, symptoms of strangulation came on, and Dr. Lane was called in. The taxis was now employed, but without benefit. Dr. Lane, therefore, gave him a large dose of opium, and left him in an easy chair in his surgery. He left him thus for about two hours, and upon his return found that in the meantime the man had succeeded in returning the hernia."—*Lancet, June* 19, 1852, p. 586.

85.—ON HERNIA.

By WILLIAM PIRRIE, Esq., F.R.S.E., Regius Professor of Surgery in the Marischal College of Aberdeen, &c.

It is a question of great importance, in reference to the operation for strangulated hernia, which of the two following modes of proceeding in regard to the hernial sac is the more advisable: namely, that of opening the sac, and dividing the stricture from within; or that of dividing the stricture, and replacing the parts without opening the sac. Of these two, technically called the *intra-peritoneal* and *extra-peritoneal* modes of division, the former is that, which, except in a limited number of cases, has received the sanction and adoption of most surgical authorities in these islands. It appears certain that, in the great majority of cases, it is by that mode alone, that it is possible to accomplish the two grand indications which it is desirable to fulfil by the operation; namely, the removal of the pressure by division of the stricture, and the return of the hernia. The fulfilment of the former, namely, the removal of the pressure by division of the stricture, is essential to the safety of the patient; and that of the latter, the return of the hernia, exceedingly desirable when practicable and proper.

With regard to the *first* indication, when the stricture is external to the sac, as is not unusual, it is possible to divide it by adopting either mode; but if formed by the sac, or within it, it is clear, that by intra-peritoneal division alone can the more important indication be fulfilled, or any good effected. Cases belonging to the latter class are by no means of unfrequent occurrence. That the neck of the hernial sac occasionally constitutes the stricture, is a point regarding which surgeons are agreed, instances having been recorded by the great surgical authorities of this and other countries, and examples occurring frequently in the practice of many surgeons. The sac, necessarily narrower at its neck than in other parts, is liable to be still farther diminished by effusion and organization of lymph, either on its outer or inner surface, as well as by a thickened and indurated state of its own substance,—conditions which, separately, or in various degrees of combination, diminish the canal of the sac. For eighteen

years I have availed myself of every opportunity of examining the condition of hernial sacs, and from my dissections I am led to conclude, that in herniæ of considerable standing, thickening of the neck is of frequent occurrence. Although constriction, when sufficient to render a hernia irreducible, is usually at the neck of the sac, yet it is not invariably so. This fact is of little practical moment if a hernia be merely irreducible; but it becomes of the greatest importance if it be strangulated, and require an operation, as the paramount object of the operation is to divide the constriction, in order to relieve the symptoms of strangulation.

The stricture is occasionally found within the sac. In a very few instances, it has been found to be occasioned by a loop of intestine; in some by a band of omentum; and in others by a band of lymph effused from the serous coat of the intestine, and surrounding and constricting it as by a ligature.

This last-mentioned condition has been described and delineated by Sir Astley Cooper. It has also been met with by other surgeons; and not fewer than four cases of it have come under my own observation.

From what is stated above, it appears very clear that the extra-peritoneal mode of herniotomy is quite unsuitable when the stricture is formed by the sac or within it, whatever be the nature of the stricture itself; and the above-mentioned examples of strictures formed by membranous bands, suggest very strongly the propriety of great caution in arriving at the determination of adopting the extra-peritoneal division; as well as, in those cases in which the sac is opened, of examining very carefully before the hernia be returned, whether membranous bands do or do not exist.

The *second* indication, which it is desirable to fulfil by an operation, is the return of the hernia.

With a view to facilitate the inquiry, as to which of the two modes of procedure is the more suitable, cases may be arranged into the three following classes:

First,—Those in which the stricture is external to the sac, in which it is neither impracticable nor improper to return the hernia—and in which no obstacle exists to that return after the stricture has been divided. Secondly,—Those in which an obstacle does exist after division of the stricture: and, Thirdly,—Those in which the return of the included intestine would be practicable, but improper.

First,—In cases belonging to the first class, either mode is applicable, but extra-peritoneal division being attended with much less danger, is decidedly preferable.

Secondly,—In regard to cases in which, independent of the stricture, an obstacle to reduction exists, it will be proper to consider what are the principal obstacles most frequently met with. These are adhesions of the protruded parts to the hernial sac, the natural means of connexion, in some rare cases; adhesion of the protruded parts to each other, and the large size of the hernia.

For a description of these obstacles to reduction, the reader is referred to the section on irreducible hernia.

If any of these conditions exist, and if the sac be not opened, reduction is in general impracticable. If the sac be opened, two of them may easily be overcome; namely, the soft recent adhesions formed by coagulable lymph, and the filamentous,—the former can be broken down with the finger, the latter divided with the knife. Two of them present an insuperable impediment to reduction; namely, the natural means of connexion, and the close organized adhesions, if these be to a great extent, and the hernia large. With regard to the two remaining conditions, the possibility of overcoming them, and the propriety of attempting to do so, must depend entirely on the particular circumstances of the case; but frequently, it is more judicious not to interfere with them, unless they exist only to a limited extent, and in herniæ of moderate size. Most of these conditions, however, are principally met with in cases of large and old hernia; and, on account of the risk of injuring the intestine in attempts at reduction, as well as that of inducing dangerous inflammation by much handling of the intestine, and the difficulty of maintaining the parts reduced, even should reduction be possible, the majority of surgeons seem now disposed to follow the advice of Sir Astley Cooper regarding such cases. His practice was, to divide the stricture, which fortunately in such cases is, for the most part, external to the sac, and to leave

the latter unopened, and the hernia unreduced. The stricture being divided, the principal cause of danger is removed. The coverings of the hernia should be replaced, and proper means taken for promoting the healing of the wound.

Thirdly,—There are certain states in which it would be extremely improper to attempt reduction; namely, when the hernia is gangrenous, or when the intestine has given way from inflammation having gone on to gangrene, or when it has been torn, or accidentally wounded in the operation. The two last-mentioned conditions can only result from unskilfulness in the mode of procedure; but, should they exist, the hernia ought not to be returned. When the intestine presents such an appearance as to render it doubtful whether its return may be followed by fæcal extravasation, the surgeon should content himself with carefully dividing the stricture. In all cases in which intestine is gangrenous, or not entire from whatever cause, it ought to be allowed to remain, so that the fæces passing off by the wound may form an abnormal anus, and extravasation into the abdomen be thereby prevented. When omentum forms the hernia, and it is gangrenous, the gangrenous portion may be removed, and the remaining part returned to the abdominal aspect of the mouth of the hernial sac. The practice of removing a portion of omentum, when from growth it renders a hernia irreducible after division of the stricture, is a proceeding which, in some cases, may be adopted with advantage. For cases belonging to this class, extra-peritoneal division is of course quite unsuitable. These remarks, it is to be hoped, will be sufficient to point out the proper mode of procedure when the hernia is sound, and reducible after division of the stricture; when it is irreducible after such division—and when it is in any of the various conditions in which reduction would be dangerous and improper; and also to show, that to follow one method indiscriminately in all cases would be unwise; that intra- or extra-peritoneal division should be adopted according to the particular circumstances of the case; that in the majority of cases intra-peritoneal division is not only the more suitable mode, but the only one which is safe, or by which any good can be effected; and that the cases in which extra-peritoneal division is suitable are those of very short standing, where there is no reason to apprehend the existence of adhesions, or of an unsound condition of the hernia; and those also of large and old hernia, where the more judicious proceeding is to divide the stricture, and not to attempt reduction.

[The following are Mr. Pirrie's cautious observations with regard to the taxis.]

There can be no doubt that intestinal inflammation is the most frequent cause of death after the operation for strangulated hernia. Some of the advocates of Petit's method have assigned as the causes of inflammation, when the ordinary proceeding is adopted, the exposure of the intestine to light and air, change of temperature, and handling. I agree with Mr. Lawrence in ascribing it, not to these agents, but chiefly to the long-continued pressure of the structure, owing to the operation being *too long delayed*, and to an injudicious and *too frequent use of the taxis* previous to the operation. I remember being very much struck with an observation of Desault's; I have not his works beside me at present, but it is to this effect:—"Think well of that hernia which has been little handled and soon operated on." The operation is justifiable and necessary, when the patient has been brought fully under the influence of chloroform, and the taxis has been fairly, fully, and skilfully tried without producing the desired effect. The conviction being thus produced, that by no other means than an operation is there hope of saving the life of the patient, it ought to be resorted to as quickly as possible. Much handling must not only give unnecessary pain, but also increase the risk of hurrying on the inflammation to results which, even though the operation should be performed, would render it unsafe to return the hernia. When therefore the taxis has been fairly and skilfully tried, on a patient fully under the influence of chloroform, no advantage can, but considerable injury may, result from the repetition of treatment already found to be unavailing. Many considerations show that the operation should be performed as soon as possible, after its inevitable necessity has been found to exist. Delay, like undue handling, increases the risk of inducing such a state of the hernia, in consequence of inflammation, as would render its return unsafe. From the circumstance that a hernia may speedily prove fatal, and from the depressed state which comes on in consequence

of delay, rendering the patient less able to stand the shock of an operation, will be seen the importance of being as prompt as possible; but there is another and a very urgent reason—namely, that if the operation be delayed until intestinal inflammation has been induced within the abdomen, it is far from certain that this inflammation will subside on the removal of the hernia which caused it. I have performed the operation for strangulated hernia, according to the usual mode, a considerable number of times, I believe twenty-three in all, and (except in one case, where death occurred in consequence of an attack of phlegmonous erysipelas which commenced after the patient was considered out of all danger) in every instance with success. This success I attribute to two things—namely, avoiding all undue and useless handling, and performing the operation early. My decided impression is, that the reason why the operation is so frequently followed by death, instead of being one of the most successful of the great operations of surgery, is, too great delay in resorting to an operation, and the undue and injurious use of the taxis, even after its adoption has proved unavailing.—*Medico-Chirur. Review, July*, 1852, *p.* 181.

86.—OBSTRUCTION IN THE LARGE INTESTINE, DURING FORTY DAYS, IN WHICH THE ASCENDING COLON WAS OPENED.

By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital, &c.

[Mrs. —, aged 42, having suffered from constipation of several days' duration, with considerable distension of the abdomen, and occasional vomiting, was visited by Mr. Vincent, of Stratford, on the 2nd March, 1851. No relief followed the administration of purgative medicines. Dr. Golding Bird, who saw the case on the 6th, concluded that it was one of mechanical obstruction in the lower colon. No obstruction could be detected on examination with the finger in the rectum. As the symptoms did not seem urgent, it was agreed to defer any operation, and to continue the sedative treatment by opium, small quantities of nutritious diet, and simple enemata, daily. After the constipation had lasted forty days, it was deemed at length advisable to operate. The operation was performed by Mr. Hilton, at four p.m., April 9th, 1851. Mr. Vincent, and Mr. Poland, assistant-surgeon to Guy's Hospital, assisting.]

The patient was brought to the edge of her bed, opposite a good light, placed on her left side, with a slight inclination upon the abdomen, which was too tender to allow of her lying entirely upon it. If it be important, in cutting down upon the carotid artery, to see the sterno-cleido mastoideus and the omo-hyoideus muscles; or in the operation upon the subclavian to recognise the omo-hyoideus and scalenus anticus muscles,—so in the operation of opening the colon in the lumbar region, behind the peritoneum, it is essential towards an exact and proper performance of his operation, that the surgeon should bring into view, by his incision, the outer edge of the quadratus lumborum.

In a thin patient, the outer edge of the erector spinæ muscle may be distinctly felt, as also may the apices of the transverse processes of the vertebræ; and these signs will be sufficient guide to the position of the quadratus lumborum muscle. But in a very fat person, in whom neither of these points can be determined, it will be necessary to draw a line, parallel to the spinous processes, directly downwards from the angle of the seventh, eighth, or ninth rib, across the costo-iliac space, to the crest of the ilium. This line corresponds with the outer edge of the erector spinæ and the apices of the transverse processes; and a measured inch from it outwards corresponds with the outer edge of the quadratus lumborum.

Before commencing the incision, and for the purpose of determining its intended course, I felt for the apices of the transverse processes of the lumbar vertebræ. These processes, or one or two of them, and most probably the third (being the central and usually the longest), may be discovered by deep pressure on the outer side of the erector spinæ. I assumed that the quadratus lumborum might be about one inch wide; and therefore made a vertical incision, nearly

two inches long, between the last rib and the crest of the ilium, extending nearer to the ilium than to the rib. This incision was made at a right angle with the direction of the transverse processes of the vertebræ, and one inch from their apices.

One well-directed single cut divided the skin and cellular tissue tendon of the internal oblique muscle, and exposed the outer edge of the quadratus lumborum. Two small arteries required ligatures, more for the purpose of preventing the escape of blood during the further progress of the operation, which might cause some obscurity, than from the apprehension connected with the loss of blood. The last dorsal nerve, lying across the upper part of the line of incision, was divided. This division gave the patient momentary pain at the peripheral distribution of the nerve. I had heard or read that in one case operated on in France, the patient had suffered severely from pain and exquisite sensitiveness in the wound for a very long time after the operation. Thinking it probable it might have been associated with the position of this or some other nerve, I thought it better to divide the nerve than to expose the patient to the possible consequences of its blending with the margin of the wound, or cicatrix.

The wound being now free from blood, the transversalis abdominis muscle was divided vertically, to the extent of nearly two inches, parallel to the outer edge of the quadratus lumborum, a considerable quantity of loose lobulated fat was exposed, a part of which was taken away, and the rest displaced by the blunt end of a director, in accordance with the direction of the original incision. An artery which had been divided required two ligatures, as it bled freely from both ends; and then the intestine was clearly and perfectly brought into view, of a greyish pink hue, and somewhat bulging. A director and forceps cleared a portion of the surface of the intestine of fat and areolar tissue, to the extent of an inch at least. The intestine was now rendered more prominent at the bottom of the wound, by the anterior part of the abdomen being pressed upon, so as to push the intestine towards the opening in the loin. A long curved needle armed with silk was passed through the intestine, and then through the integuments at the point nearest the anterior edge of the wound, so as to fix the intestine anteriorly; and in a similar manner the part nearest to the posterior edge was likewise fixed. An incision of about an inch in length, vertically between the transfixed point above alluded to, was then made into the intestine. Some gas and a small quantity of thin fæculent matter escaped immediately through the opening, and then ceased to flow—the intestine at that time being perfectly quiet—but in a few seconds the vermicular action of the intestine appeared, and was followed by a flow of thin brown fæculent fluid through the opening. This occurrence and arrest of the flow of fæculent fluid, consequent on the presence or absence of peristaltic action, supervened several times; sometimes associated with the manifest movements of the small intestines towards the cæcum,—at other times resulting from the retrograde influence of the transverse and descending colon, so that the transverse colon was emptying itself from left to right, contrary to its usual course. A ligature was applied to a small artery, which had been cut in the walls of the intestine. Two additional sutures were now applied, to fix the upper and lower angles of the wound in the intestine to the nearest part of the skin. The wound being free from blood, the intestine fixed, and the fæculent matter streaming out occasionally from the wound, napkins and sheets were so arranged as to receive the discharge, and the patient was placed upon her back, expressing herself much relieved by what had been done. Not more than half an ounce of blood was lost during the operation. Two grains of opium were given immediately, and some wine and water.—*Guy's Hospital Reports, Vol. VIII., Part* 1, *p.* 186.

[From this time to midsummer, 1852, the case progressed favourably, when some untoward symptoms occurred. These, however, are reserved for a future period.]

87.—ON DISEASES OF THE RECTUM.

By Richard Quain, Esq., F.R.S.

[In speaking of the excoriations and ulcerations which are met with in the lower part of the rectum and at its orifice, and which occasion such disproportionate suffering and anxiety, Mr. Quain relates the following examples.]

(*a*) A barrister, about 35 years of age, states, that he has been troubled for some months with itching and painful irritation, especially at night, and when ailing in any degree. He has had, moreover, actual pain during defæcation, which comes on during the evacuation, and lasts for half an hour afterwards.

Upon examination, two or three streaks of excoriation were found around the anus, no more than the epithelium being removed, and a single point of ulceration, no larger than a pin's head, between the folds of the skin. After having, as he informed me, tried various remedies, including acetas plumbi with opium, as a lotion and as an unguent, he was entirely relieved by the following plan:—The bowels were kept free by the management of his diet after an aperient of confection of senna had been used for a short time. The little ulcer was once touched with a point of sulph. cupri. Afterwards, in the morning after the bowels acted, and in the evening, hot water was applied with a sponge for a few minutes, and then each time an ointment, consisting of hydrarg. c. cretâ and ceratum cetacei (3ss. to ℥ i.)

The use of these remedies soon gave relief, and, in a couple of weeks, wholly removed the ailment.

It is unnecessary that the forms of disease in which local applications are sufficient for the cure should be illustrated further. I therefore proceed with cases which require an operation for their permanent relief.

(*b*) About fifteen years ago, after a miscarriage, Mrs. — was attacked with external hemorrhoids. The maladv gave little trouble until about five years since, when, after childbirth, the hemorrhoidal tumours became enlarged, and excruciating pain was at the same time felt during the evacuation of the bowels. For three years before the operation, pain constantly came on under the same circumstances; and during the last three months, it was most intense when the fæcal discharge happened to be at all consistent or figured. To prevent this source of distress, the constant use of magnesia was found to be sufficient to act as a laxative. There was no pain, except after an evacuation.

When I saw this lady—it was about a month after her accouchement,—her general health was good; indeed, it was habitually so. But pain came on with every alvine evacuation, beginning at the commencement of the act, and lasting a couple of hours or longer. I found her lying upon a couch, while she strove to teach her children, but unable to satisfy herself in the manner of discharging this duty on account of pain. Abrasions of the cuticle were apparent towards the back part of the anus, with a small amount of ulceration. There was comparatively but little pain excited during the examination in this case.

Various applications having been used by this lady's medical attendant, but without material advantage, I divided the membrane through the ulcerated and excoriated part, and a permanent cure has been the result.

The account of the foregoing case is abridged from a detailed statement, for which I am indebted to my friend Mr. Gasquet, by whom my assistance was required for its management.

(*c*) Mr. ——, a gentleman, aged about 60, who has the appearance and constitution of a healthy person fully ten or fifteen years younger, had been suffering for three months before he applied to me (now more than four years ago), from distressing uneasiness about the lower part of the rectum. He stated, that at first there was a small lump (external hemorrhoid), from which a surgeon had removed by incision a clot of blood; but, notwithstanding this operation, the uneasiness continued.

When I visited this gentleman, I found that he had been taking an electuary containing sulphur, and that when his bowels acted under the influence of this medicine, much pain was felt during the evacuation, the fæcal matter at the same time having a strong sulphurous odour. When the bowels acted without the medicine

there was no pain during the act of defæcation; but subsequently, in an hour, or even after as long an interval as two hours, a distressing uneasiness came on, and continued a good part of the day. There was here, as in the preceding case, but little of the extreme sensibility during examination which we shall find occurring in other persons. No excoriation or other appearance of disease existed externally, and indeed it was only after a very careful scrutiny that any diseased appearance was detected. The examination, it may be mentioned, was perseveringly continued, from the conviction, that the occurrence of pain after the evacuation was a certain indication of disease of the mucous membrane. A single point of thin, or nearly translucent membrane, having been found, an incision was made through it. Thereby the patient was entirely relieved, and he has continued well after a lapse of upwards of four years.

(*d*) Mr. H., aged about forty, a robust and generally healthy person, is master of a grammar-school, but in the habit of taking a fair share of exercise. The following outline of the facts is taken from a detailed history of his malady, furnished to me by the patient.—"Ever since (to use the words of my informant) I assumed the *toga virilis*, now over twenty years ago, I have been subject to flatulence, but am always better in summer than in winter; and whenever I get plenty of strong sweating exercise, I am all right and sound." Several years ago (in 1843) the gentleman began to be troubled with a sharp cutting pain when he went to the closet, and the pain was in proportion to the hardness of the fæces. Under the advice of a respectable practitioner who attended his family, Mr. H. at this time took medicine thrice a-day, each dose producing at least one evacuation of the bowels. Of this treatment he "soon got tired;" but under the use of it he was relieved of the local pain, and he continued free from suffering for about two years. About the expiration of this period, the old dyspepsia and flatulence continuing, and in an aggravated form, he was induced to place himself under the care of a homœopathic practitioner, and, says the patient, "whether by his dieting, his globules, or what not, I certainly improved in health for a time. But we differed on one (to me) grand point. He contended that the fæces of a man in good health should be hard; and truly mine came hard, and shortly afterwards my old cutting pains returned." Mr. H. now had recourse to enemata, and by the daily use of this expedient, he was usually free from pain, but, without the water, an evacuation was never painless. By-and-by, even with the enema, there was a recurrence of pain, which began each time while the instrument was being passed. The duration of the suffering was "uncertain, extending to one, two, or three hours, sometimes the whole day, and occasionally part of the night also. Finding (says Mr. H.) that the suffering was often less when I was lying down, I got into a habit of evacuating just before going to bed, so that lying down might aid me. But though successful generally by this plan, I have often lain awake for hours in pain."

When I saw this gentleman, in 1849, I prescribed local applications, which, with the enema, afforded relief. After having gone on, however, for several months with but little pain, and that inconstant, he called upon me a second time (Easter, 1850). I now found that he had gradually come to suffer a good deal. The pain occurred as before, after an evacuation, or the passage of the enema-pipe; never in any other way. Its duration had steadily increased, and "latterly had lasted from stool to stool"

On account of the horror this gentleman had of the pain that would be occasioned by the examination of the rectum, from the recollection of a former occasion, I had chloroform administered. While he was under the influence of this agent I found an ulcer in the mucous membrane, a little below the point of the coccyx; and there were likewise three streaks of excoriation externally, towards the posterior part of the anus. I therefore incised the mucous membrane, and the skin as well, over the ulcerated parts. The report may be ended in the words of the patient: "Immediately after the operation, which was performed without my knowledge or consciousness, the part commenced healing, and in about three weeks I was a different being. In less than a month the parts were as well as ever they had been, and to this time (two years from the operation) I have not felt any pain whatever. My old enemy the flatulence, however, still teases me at times."

(*e*) Mr. C., aged 35, a tradesman, in large business, a very early riser, and active in his habits, in general good health, applied to me in 1847; states that he has had "some trouble about the bowel on and off for fourteen or fifteen years." At first the inconvenience was slight, but attacks of increased distress used to occur even then; and while these lasted there was pain, with prolapsion during the evacuations. At this early period he was in the habit of "taking drugs, which often brought on purging," and to this habit he attributes his constant suffering. For upwards of two years Mr. C. has felt pain after every evacuation of the bowels, beginning after the lapse of about ten minutes from the act of defecation. At first he found some relief from lying down; but soon he was too much irritated by actual pain ("agony" he calls it) to remain still. He then devised for himself another mode of obtaining a degree of relief, viz., after having been at the closet he sat over a pail of cold water, the vessel being provided with a lid perforated like a night-chair, so that as he sat the diseased part was immersed in the water. Two hours were so spent upon every occasion before he could make the exertion even of dressing. Then, too, the pain still continued, though in a mitigated degree, insomuch that he was not free from suffering from eight in the morning until about two in the afternoon. For some time before I saw this patient he was not free from pain during the entire day. This, however, was on alternate days, for he avoided daily evacuations, in order to escape one half of the distress. If the bowels happened to act at night, both Mr. C. and his wife were hindered from sleeping for as much as five hours by his restlessness. Mr. C. mentioned to me, that while the pain lasted he had difficulty in restraining himself from being petulant even to his customers, or any other person with whom he had intercourse. To use his own words, he was often ready to "snap at them." But, when once the pain ceased, he was perfectly well; and his appetite for food all this time was as good as ever it had been.

On making an examination, I found considerable folds of skin around the anus (the remains, no doubt, of external hemorrhoids), and within the bowel opposite or below the point of the coccyx, a circular ulcer of the mucous membrane, about the size of the end of the little finger.

The patient being placed under the influence of chloroform, the membrane was divided through the ulcer for an inch and a half in length, and thenceforward all the old suffering ceased. Moreover, though he had, before the operation, suffered from constipation, he has since then been wholly free from that inconvenience.

(*f*) The next case was seen by me in consultation with my friend Dr. Jenner, and Mr. Stevenson, of Rochester, in December, 1851.

Mr. P., aged about 35, a farmer of robust frame, and in good general health, for nearly twelve months whenever the bowels acted, has been suffering pain which has always come on during the evacuation, and has lasted about four hours each time. When the bowels acted of an evening, he has had pain all night. The suffering has been excessive,—a degree less, however, when the fæcal discharge is fluid; and he has found the lenitive electuary the best auxiliary to attain this end. At other times, and independently of the alvine evacuations, Mr. P. is entirely without uneasiness of any kind, and he then feels quite well.

From recollection of the effect upon some previous occasions, in the country, the patient could not control himself so as to submit to the examination. Chloroform was, therefore, administered; and when he was under its influence, I found the muco-cutaneous covering of the sphincter ulcerated to about the extent of sixpence, the bottom of the ulcer being of a vivid red colour. The ulceration was seated in the middle, at the back part of the bowel, immediately within the verge of the anus; and it involved the membrane covering the external as well as the internal sphincter. Above it there were two small, hard, and pendulous projections, about half-an-inch long, probably the remains of internal hæmorrhoids.

I incised the ulcer, together with the mucous membrane and skin beyond it, and snipped away the polypiform bodies at the same time. A full dose of Battley's liquor opii was prescribed soon afterwards by Dr. Jenner.

Upon one occasion, after the operation, when the bowels acted, the fæcal matter being indurated and in a large mass, the patient felt some soreness for three or four hours; but he states that the sensation was wholly different, in kind as well

as in degree, from the pain he had long been accustomed to. A few days later, under the same circumstances, there was a little soreness during the evacuation, but it did not continue after; and when the patient left town (ten days after the operation) all uneasiness had disappeared. At this time a firm cicatrix occupied the place of the ulceration; and the examination now gave only the sensation of slight soreness, which went off at once. The patient mentions that, in a similar examination before he came to town, his shirt was wet through from perspiration, and his skin "became all over black" (his own phrase) from the agony he suffered. The pain, too, and of the same excruciating kind, lasted for six hours after. Even now, he says, he has still a curious fear of the action of the bowels, the remains of the "horror" he used to feel.

For our inquiry into the nature of this disease, by and by, it will not be immaterial to mention, that to his physician, Dr. Jenner, Mr. P. said, a few days after the operation, that I "must have made a great gash;" for that, while the size of the fæcal matter previously (since his ailment began), when figured at all, "was no bigger than a tobacco pipe" (his own expression), lumps of large size now passed without trouble. Lately Dr. Jenner has informed me, that our patient, whom he has seen since his return to the country, is perfectly free from suffering, and quite well in all respects.—*Med. Times & Gazette, July* 3, 1852, *p.* 1.

[Mr. Quain remarks that so far as his observations have gone, the general health of persons suffering from different forms of this singular local malady has been in every instance unexceptionable. He continues:]

The position and the degree of the morbid alteration, it has been seen in the cases, vary considerably. Thus the disease occurs externally, and within view therefore for examination, in the shape of excoriations merely, consisting in the removal of the epithelium, or as minute oval or rounded ulcers in the furrows between the folds of the skin about the anus (Cases *a* and *b*); or it is situated more deeply as an excoriation, again, or ulcer, immediately within the grasp of the external sphincter, and higher up as an ulceration of the mucous membrane covering the internal muscle, an inch or more from the extremity of the bowel. The ulcer is met with at or towards the back part of the gut, not unfrequently opposite or directly below the point of the coccyx (Cases *d* and *e*). I have indeed had to treat excoriation at the fore part of the anus, within the grasp of the superficial sphincter, as well as externally, but I have not hitherto had occasion to operate for ulceration of the membrane, except at the back part or the sides of the bowel.

The external ulcer has usually a yellow or ash-coloured base, but the internal one is often of a vivid red colour. Ordinarily the membrane is not ulcerated through, though instances of its being so have come under my observation. I have not hitherto been able to trace out satisfactorily the condition which precedes the state of ulceration. It seems probable, however, that a pustule or little abscess is the precursor of the ulcer. In one instance, the disease having been of no long duration, and the suffering comparatively slight, the membrane appeared to be thinned from beneath, but not visibly ulcerated upon the surface (Case *f*). This condition I am disposed to consider one form, at least, of an early stage of the disease.

The extent of the ulcerated surface varies from the minutest point (Case *a*), to the size of the end of the finger (Case *f*). It seldom exceeds this size. The amount of actual disease, therefore, is but trifling in comparison with the pain, which is always described as harassing, and, in some instances, amounts to actual agony. For example:—A lady had difficulty for some hours in teaching her children (Case *b*); another person "found it hard upon him" to attend to his ordinary avocations; a third, a man in business, was wholly disabled from all occupation for a couple of hours, and afterwards, for the space of three or four hours longer, was impatient and "snappish" on account of actual pain (Case *e*). Two of the patients (Cases *d* and *f*), from "horror" of the pain they had before experienced, declined to submit to an examination of the bowel without the use of chloroform; and, in one instance, so great and so diffused was the pain, that, while merely pressure was made upon the nates preparatory to an examination into the nature of the disease, the patient—a member of the medical profession—darted uncontrollably away, as if he had been stung. All this sensibility is, doubtless, owing to the peculiar organization of the membrane affected,—the degree or mode, that is

to say, in which the bowel is here supplied with nerves, for ulceration occurs higher up in the bowel without the pain, certainly without the agonizing pain which attends upon the ulcer at or near its orifice. With more or less intensity, the same sensibility exists in other outlets of the body, and it is obviously connected with their proper function, the organs being through them in communication, so to say, with the outward world. Every one is familiar with the acute sensitiveness of the eyelids, and most persons know how much suffering a small ulcer affecting the lip, especially on its inner side, will produce whenever food is taken. One other fact is worthy of notice before we quit this part of our subject, namely, that a wound of the mucous membrane of the bowel, made in the situation of the most painful ulcer (for instance, the wound made in the operation), though it gives rise, as would be expected, to common soreness, is not attended, when the bowels act, with any of the peculiar or depressing distress that arises from the idiopathic disease. (See especially Case *f*).

So long as the parts are undisturbed, the ulcer is not attended with pain; and of this the action of the bowel is the common and constant exciting cause. In many patients the suffering begins, as might be anticipated, with the passage of the fæcal matter (Cases *a b*, *d*, and *f*); but it is remarkable that in no small proportion of cases it is only after the lapse of some time from the act of defecation that the pain begins (Cases *c* and *e*). It is, I believe, when disease exists externally, or immediately at the verge of the anus, that the pain arises during the evacuation; and it is when the ulceration is within the intestine, and only there, that the distress comes on subsequently.

The interval that elapses between the evacuation and the occurrence of pain varies from about ten minutes (Case *e*), to half an hour, a whole hour, or even two hours (Case *e*). I cannot assign the interval of time that elapses between the application of the exciting cause and its effect to any reasonable cause; nor can I account for the variations in its length, for though the delay seemed in most cases to be longer as the morbid change of structure and the suffering were slight (Case *e*), yet it was not invariably so. In the example of greatest distress that has fallen under my observation, the pain did not arise till about two hours after the bowels had acted.

The duration of the suffering is equally various in different persons. It lasts in one case half an hour (Case *a*); in another, two hours (Case *b*); in a third, three or four hours (Case *f*); and, in some, even a longer time. One of our patients was able to calculate on being relieved in about six hours, and no sooner (Case *e*); while another came by degrees to be constantly in distress, with an increase at the time of defecation (Case *d*).

The attack of local pain being at an end, the patient feels perfectly well, and apparently would continue so were it not for the disturbing effect of the passage of fæcal matter. On this account, some of the sufferers manage to diminish the number of the evacuations (Case *e*); and others have even reduced the quantity of food to a very small amount.

Treatment.—As all persons suffering from these complaints state that the severity of pain is in proportion as the fæcal matter is figured and hard, and the converse, it is above all things necessary in the management of a case—be it excoriation or ulceration, be it external or internal—that means should be taken to keep the evacuations in a fluid state.

To attain this end the enema of warm water is more effective than any other means, and more generally applicable; but it occasionally happens, that even the use of the apparatus for this purpose is not endurable (Case *d*). Laxative medicines are advantageous, and of various kinds in different persons. Thus, magnesia was found effectual in one (Case *b*). Confectio sennæ is often useful. I have known a patient complain that the confectio piperis prescribed by an eminent surgeon had augmented the suffering very much; and the addition of sulphur to the lenitive electuary had the same effect in another (Case *c*).

The horizontal position of the body after the evacuation is useful to relieve pain, but within narrow limits. I have read somewhere the recommendation, that, in order to miss the pain, the patient should get into the habit of evacuating the bowels at bed-time. It might, *à priori*, be expected, that, considering the effect of position on the large veins of the rectum, the expedient alluded to

would be beneficial; but, turning to the evidence afforded by our cases, you will find it in practice to be often of but little or no avail, for the suffering in some continued while they lay in bed, even so as to deprive them of sleep during several hours (Cases *d*, *e*, *f*).

With local applications, the excoriations and ulcers which affect the skin are in almost all cases very manageable; but, as is found in treating sores elsewhere, the same remedy is not equally efficacious in all cases. In cases of mere excoriation, I have often derived advantage from the grey powder (pulv. hydrarg. c. cretâ), mixed with cerate (℥ss. or ℈ij. ad ℥i.), (Case *a*), and with or without a lotion of lot. plumbi, mixed with oxide of zinc; and a light touch of argenti nitras or cupri sulph. at intervals is generally effectual in causing the small external ulcers to heal. But when the ulceration is within the bowel, over the sphincters, I have no reliance upon any medicinal application; and the recourse to such means becomes of the less importance since an operation which is unaccompanied with risk rids the patient at once of all suffering.

Before proceeding to observe upon the operation resorted to in the foregoing cases, I have to say a few words respecting the speculum and chloroform, as applied to the complaints under consideration. From the speculum, after having resorted to the use of it in various forms, and with (latterly) the addition of a small reflector, I cannot say that I have derived any material advantage, either in making out the diagnosis of the disease, or in performing the operation. In some cases, indeed, from the position of the ulcer, the instrument is wholly inapplicable. The necessity for administering chloroform or ether for the operation depends on the degree of pain and spasm likely to arise when the anus is distended. Accordingly, in some of our cases, the anæsthetic agent was not used (Cases *b* and *c*), the operation in itself being, in truth, but little painful; while in others, its use was almost indispensable, on account of the violent pain and spasm that arose whenever the orifice of the bowel was in any degree disturbed (Cases *d* and *f*).

The method of performing the operation is as follows:—The fore-finger of the left hand being applied upon the diseased point, a probe-pointed bistoury (that which I use is narrow, and the cutting edge reaches only over one-half the blade) is drawn fairly through the sore into the subjacent tissue. This is the method for ordinary cases; but where the ulcer is extensive, or complicated with other diseases, as fistula, some addition to the simple incision is necessary, according to the nature of the complication.

The sphincter is not necessarily interfered with; but it is very probable that the muscle is scored or notched, as the incision is carried quite through the ulcerated part.

The operation is, according to my experience, invariably successful in cases of the ordinary kind; but, inasmuch as it is not the operation commonly resorted to or recommended by the highest surgical authorities, a few further remarks upon the subject are necessary.

The eminent French surgeon, Boyer, it was who first relieved this painful disease by an operation; but this surgeon believed that the contraction of the sphincter ani was the chief disease to be overcome, and the incision he practised went through the muscle. There cannot be a doubt of the efficiency of the operation so performed. Moreover it was a great improvement in surgery; for, those afflicted with a most painful malady, before the introduction of this operation, were left to suffer on without real remedy. Little wonder, then, that the operation, and in the same form, should have been universally adopted by surgeons. But the result of our cases proves, that this operation is a much larger and more serious one than was necessary, because it was attended with infinitely more risk of the dangers of surgical operations, viz., abscess, erysipelas, &c. In common with others, I practised the same method of operating, until a circumstance occurred which led me to adopt a different plan. A little more than twelve years ago, being about to perform Boyer's operation upon a female in this hospital, the patient, who was lying in bed, and not held with sufficient firmness, having suddenly moved away, I drew the bistoury through the mucous membrane and integument only. It occurred to me at the moment to ascertain if that slight incision would be enough to relieve the patient. The success was com-

plete; and from that period I have used no other operation in ordinary circumstances. At the time I thought that this method had originated with myself; but upon examining various books with a view to be assured upon this point, I found in a lecture of Sir Benjamin Brodie's a remark which satisfied me that priority in this matter was due to another surgeon. This will be apparent from Sir B. Brodie's words:—"The ulcer is always cured by a division of the sphincter. This, however, is not always necessary, unless the muscle be actually contracted. Mr. Copeland has observed, that, when there is a simple ulcer, the mere setting of the mucous membrane at liberty by dividing it longitudinally, so as to include the ulcer in the incision, is sufficient to effect a cure."—(*Medical Gazette*, Vol. XVI, 1835.)

No case shows better than this how long an erroneous system may be pursued in deference to an erroneous theory. The sore to be cured was a small one, such as would, in most other parts, give little trouble to the patient or the surgeon; and the sphincter seemed to be mainly concerned in the disease, because of its being in a state of violent contraction, resisting very forcibly all efforts for the examination of the part. But this state of the muscle is, in my judgment, no more the actual disease than the spasm of the orbicularis palpebrarum is the curious and painful malady so often met with among children,—strumous ophthalmia. The passage of fæcal matter is, in the one case, what the stimulus of light is in the other. The muscular contraction is equally intense in both; and the division of the muscle is no more necessary for the cure of the one than of the other. Doubtless the spasm very largely aggravates the suffering in both cases: but its cessation in the complaint we are specially engaged with, by division of the ulcer and the mucous membrane only, proves sufficiently that the muscle is not the seat of the disease.

Morbid contraction of the sphincter ani.—The same eminent surgeon who introduced into practice the cure by incision for the disease we have just been considering, described also the spasm of the sphincter as a substantive disease, giving rise to exactly the same suffering, and requiring the same operation for its cure, as the ulcer with spasm of the muscle. Indeed, Boyer seems to have regarded the muscular contraction as the real malady, of which the ulcer was but an accidental accompaniment, or a consequence. This view,—namely, that the spasm of the sphincter exists as an idiopathic complaint, and not only so, but is also the primary as well as the principal morbid condition, even when an ulcer exists,—is very distinctly expressed by two other surgeons of the highest authority,—viz. Dupuytren and Sir B. C. Brodie; and, so far as I know, it is regarded as a well-established doctrine among writers on surgery.—(See 'Leçons Orales,' Tom. III., p. 286; and *Medical Gazette*, Vol. XVI., p. 26).

No one can hold in greater respect than I do the authority of the great surgeons whose names I have just now mentioned; but, feeling bound to state, in these lectures, the result of my own experience, I cannot hesitate to say, that I have hitherto, and after diligent search, failed to discover a single example of the disease as above defined, and that I dissent from the view generally taken as to the influence of the sphincter muscle in those complaints. If the division of the sphincter were still to be regarded necessary for the cure of the ulcer or fissure of the mucous membrane, attended with spasm, the question of the independent existence of muscular spasm as an idiopathic disease would probably be of but little moment in a practical point of view; but, if we are justified in considering it established, that the sphincter is but secondarily or sympathetically affected in that disease; and that a very much smaller operation (one not involving the sphincter) is sufficient, not only to cure the ulcer, but likewise to cure the spasm of the muscle at the same time, then the question of the existence or non-existence of another disease requiring for its cure the section of the muscle, becomes of practical importance. The whole subject is obviously one of evidence, but the evidence of facts, not of opinions. If you turn to the lectures of Dupuytren and Sir B. Brodie, you will find, that they contain no cases illustrative of the views maintained by the authors respecting disease of the sphincter. Boyer, however, is more circumstantial,—and with Boyer, let it not be forgotten, originated the mode of viewing the malady, as well as the plan of treatment I venture to question. In the work on 'Surgical Diseases,' Vol. X., this surgeon treats

of "constriction with fissure," and the "constriction without fissure;" he ascribes to both the same symptoms, and makes the diagnosis between them to depend on the presence, in the former, of fixed pain at a point, together with an ulcer,—these being absent when the muscle only is affected. To illustrate the latter disease,—viz., the "constriction without fissure,"—three cases are given; but, upon looking into the details of these, I find, that, while one contains no account of the examination of the rectum, and is therefore to be set aside as valueless, it is said of the other two, that increased pain was excited in each by pressure upon a particular point, and, likewise, that at the painful point, disease (an induration in one, excoriation or ulcer in the other) was felt during the examination. The cases, therefore, plainly do not bear out the author's own general statement respecting the characteristics of the disease they are adduced to exemplify; indeed, there cannot, it seems to me, be a doubt that they were examples, not of an idiopathic affection of the sphincters, but of disease of the mucous membrane, with sympathetic spasm of those muscles, and therefore analogous, in all respects, to cases detailed in an earlier part of these observations.

But, before we part with this subject, it should be clearly understood, that there is occasionally no inconsiderable difficulty in discovering the local ailment. In one instance, it was only after a protracted search that the diseased point was discovered (Case *c*). In this case, too, not only was the morbid part very minute, but there was an absence of any special tenderness upon pressure being made over it. Still the cure was effected by division of the mucous membrane at the suspected point.—*Med. Times and Gazette, July* 24, 1852, *p.* 81.

88.—*Chloride of Zinc Paste in Fistula in Ano.* By E. Lacy, Esq., Poole.—[Mr. Lacy recommends the application of chloride of zinc paste in fistula, on account of the perfect success resulting from it in three cases. It is applied as follows:]

The ordinary paste (chloride of zinc, water, and flour], being entangled in a grooved probe, is passed up to the opening in the rectum. The point of a second probe or instrument is then placed in the groove, and passed just sufficiently high up, that, by its being retained in that position while the armed probe is withdrawn, the groove may be cleansed of the paste. This may be repeated every second or third day.—*Med. Times and Gazette, June* 5, 1852, *p.* 576.

89.—CASE OF WOUND OF THE ABDOMEN.

By Archibald Blacklock, Esq., late Surgeon R. N., Dumfries.

[This accident occurred to a boy between nine and ten years old, while bathing, by his falling upon a broken wash-hand basin. A wound thereby was inflicted, three inches in length, commencing a little below the umbilicus, nearly to the pubes, through which the greater part of the small intestines, transverse arch of the colon, and the omentum, immediately protruded. Mr. Blacklock continues:]

When I first saw him, he had been lying upon the bank of the river upwards of an hour, and the protruded parts, which were chiefly hanging over his left thigh, had evidently been in contact with the ground, for a considerable quantity of sand, withered grass, and other extraneous matters, adhered to them; and, from long exposure to the atmosphere, and fruitless attempts on his own part to force them back into the abdomen, they had become of a deep red colour. Twenty minutes more elapsed before a supply of warm water and a sponge could be procured from Nunbank House, the nearest residence; and the washing of the intestines and mesentery, which was chiefly done by allowing the water to flow over them from the sponge, also occupied a considerable time before they could be replaced, as the poor boy complained, in the most pitiable and distressing manner, when the parts were much touched with it, and occasionally said, in a whisper, "Just kill me." The reduction even was by no means so simple and easy a process as some might suppose; for it frequently happened that patches

of sand, &c., which had not previously been observed, were brought into view, as convolution after convolution of intestine was about to be replaced, and of course had to be washed off before the operation could be proceeded with. I may therefore safely say, that it was fully an hour and a half from the time that the intestines were immersed in the cold river until they were fairly returned into the abdominal cavity. The whole, however, being replaced, and the omentum spread out, so as to come as much as possible between the intestines and the external wound, the lips of the latter were immediately approximated, and secured in contact by three interrupted sutures, which were afterwards supported by strips of adhesive plaster. The unfortunate boy was now conveyed to his father's house in Dumfries, about a mile from the place where the accident occurred; and three hours after, when reaction had fairly commenced (for, in the first instance, or at least, from the time of my arrival, he was pale and almost pulseless, although little or no hemorrhage had taken place), twelve leeches were applied, and a grain and a half of calomel, combined with one-twelfth of a grain of opium, directed to be given every two hours.

April 11th, 9 a.m.—Has passed a pretty quiet night. Leeches bled freely, encouraged by warm fomentation; pulse 124, and of moderate strength and fulness; abdomen is tense, tender, and tympanitic; complains of thirst, and occasionally vomits, soon after drinking; has made water twice; twelve more leeches to be applied to the abdomen, and the calomel and opium continued. 1 p.m.—Pulse 140: complains of no uneasiness unless the abdomen is touched; thirst urgent; still occasionally vomits after drinking; the bleeding from the leech bites has been very copious. 10 p.m.—Is much in the same state as at last visit; pulse 144.

April 12th.—Has had another quiet night, and feels quite easy when not moved or meddled with; pulse 122, and of moderate strength; skin comfortably warm and soft; tongue rather moist; thirst, however, continues, and he still vomits the milk and water, which he prefers to drink, but not so often as formerly; urine abundant, and of normal appearance; tension and tenderness of the abdomen have not increased; and the edges of the wound remain in contact. Six p.m.—The tension and tenderness of the abdomen have evidently increased since morning; pulse 124; apply ten leeches, and continue the calomel and opium. Nine p.m.—Leech bites bleeding freely; abdominal tension and tenderness rather less; pulse 122.

April 13th, Ten a.m.—The swelling and tenderness of the abdomen considerably diminished; pulse 114, soft and natural; thirst less; urine copious; gums tender. Calomel and opium to be discontinued; has taken altogether forty-five grains of the former, and two and a half grains of the latter. Nine p.m.—Progresses favourably; pulse 104.

April 14th, Eleven a.m.—Has had a good night, says that he feels quite well, and is very hungry; pulse 104, and rather full; thirst moderate; urine still copious, but the bowels have not moved since the accident; had an evacuation, however, shortly before that event. To have a little arrow-root at any time he may wish to have it. Nine p.m.—Pulse 94; tongue moist and clean. A suppository of common brown soap to be placed in ano.

April 15th, Ten a.m.—Bowels have moved three times since yesterday evening; evacuations of a healthy character; no discharge from the wound; and the dressing has not been interfered with.

April 17th, Ten a.m.—Removed the plaster and sutures; wound seems well and permanently closed—nicely healed by the first intention, except at one point, where a little of the omentum, not larger than a garden pea, protrudes; touched this with nitras argenti; appetite good. To have beef-tea and bread.

April 18th.—Has had no evacuation from the bowels since the 15th. To have a gruel enema, and to be allowed porridge and milk morning and evening.

April 19th.—The bowels have moved twice since yesterday, when the enema was administered, both evacuations of natural appearance, and well formed. From this period he daily gained strength. On Monday, 5th May, returned to school; and up to this date continues perfectly well.

Remarks.—The above case of wound of the abdomen, with free protrusion and long exposure of the intestines—not to speak of their being previously immersed

in cold water, and afterwards covered with sand and dirt—appears to me worthy of being recorded, as it furnishes a good instance of perfect recovery under very unfavourable circumstances; and shows what may sometimes be expected and prognosticated, even in the worst of cases, provided the coats of the intestines have not been penetrated, when the protruded parts are carefully replaced, the wound closed, and the patient frequently seen and prescribed for (but not too officiously) as symptoms seem to indicate. In this instance the patient had enjoyed excellent health up to the time of the accident, and possesses a fine, quiet, amiable temper. Indeed, a more tractable and heroic patient never came under my observation, either at home or abroad—in peace or war; and his composed state of mind no doubt greatly facilitated the healing and restorative process, and conduced to his rapid and complete recovery. The total prohibition of food, if we except the milk which was mixed with his drink, during the first four days, and strictly avoiding the employment of purgatives during the whole treatment, are also circumstances not to be overlooked.—*Monthly Journal of Medical Science, July*, 1852, *p.* 30.

90.—*Irritable Rectum with Constipation.—Treatment by Opiates.* Under the care of Dr. Barlow.—Among the diseases to which the aged are subject, constipation is one of the most common, and an irritable condition of the lower bowel one of the most distressing. As the two affections are commonly antagonistic to each other, their occasional concurrence may perhaps seem to require some explanation. The fact is, the irritability affects not the whole rectum, but merely its outlet, and the costiveness, easily permitted by the torpidity of the upper tract, is chiefly due to the painful condition of the anus, which induces the patient to avoid as much as possible all efforts for the expulsion of fæces. Thus, the two states act and re-act to the exacerbation of each other; the hardened matters give pain in the passage, and the fact of their doing so induces their retention for a longer time than ordinary, thus permitting of their becoming still more indurated. Not unfrequently this painful state of the verge of the rectum is accompanied either by small hemorrhoidal excrescences, or by cracks and superficial fissures in the skin, just at its point of junction with the mucous membrane. We have lately seen several severe cases of this description among the patients under Dr. Barlow's care, and have been much pleased with observing the result of a plan of treatment which mainly consists in the free administration of opiates. It is only by a correct appreciation of existing conditions, both local and general, that the probable effect of any given remedy can be with any certainty predicated. This truth forgotten, the results obtained by medication will often seem inexplicable, or even the known properties of our most familiar drugs reversed. Thus, in the affection under consideration, the use of opium is almost always followed by gentle relaxation of the bowels, not because that drug possesses any purgative properties, but simply because it relieves the condition on which the constipation depended.

Sarah James, aged 66, thin, and rather pale, was admitted Sept. 3, 1852, on account of obstinate costiveness, attended with great pain each time the bowels were relieved. Seven years previously she had suffered from piles, which were then excised, and left wounds which did not heal for a considerable time. Ever since that operation, more or less pain and smarting has existed about the anus, and the bowels had become progressively more and more difficult to move. She had been in the constant habit of taking purgatives, chiefly castor oil, of which a very full dose was usually necessary to produce any effect. Blood was occasionally passed, and slime and matter very frequently. She had been under much medical care, but for several years had never known what it was to pass her motions without great pain; the discharge of pus had, however, decreased of late. During the week previous to admission her sufferings had been much aggravated: there had existed an almost constant desire to go to stool, on which occasions nothing except a little dirty water passed, and the repeated use of glysters and large quantities of castor oil had only succeeded in removing small portions of scybalæ.

On admission, she was first subjected to an examination by Mr. Poland, with a

view to ascertain whether any disease existed about the parts capable of relief from surgery; but, as nothing was found, Dr. Barlow retained the case under his care, and prescribed for her pil. sapon. c. opio gr. v. ter die.

Sept. 12.—The pain about the anus has nearly disappeared, and the watery evacuations have ceased to occur. This morning an almost natural motion passed without producing much pain. Rt. pil.

17th.—She still feels in a very comfortable condition, but the bowels do not act quite so much as could be desired. Rep. pil., cap. ol. ricini 3ij. alternis auroris.

Oct. 12.—The same plan of treatment has been continued up to the present date. The bowels have acted regularly once or twice after each dose of oil, and without any pain whatever. In these respects, she states that she has not been so comfortable for many years. The opium has not in any way disagreed with the digestive functions, but appears, as is not unfrequently observed in old people, to have had quite a beneficial effect on the system generally.—*Med. Times and Gazette, Oct. 30, 1852, p. 437.*

ORGANS OF URINE AND GENERATION.

91.—ON STRICTURE OF THE URETHRA.

By Prof. Syme.

There are two forms of this disease in which mere dilatation has been found inadequate to afford relief; and it is these that I now wish more particularly to make the subject of observation. In one of them, the contracted canal is so extremely irritable that the introduction of an instrument aggravates instead of alleviating the symptoms, and exposes the patient to various dangers from the local and general disturbance thus excited. In the other the peculiarity consists in a contractile tendency so strong as quickly to counteract the effect of dilatation, and thus to render it useless. These two conditions of stricture—the irritable and contractile—long constituted one of the greatest opprobria of surgery; and placed a practitioner in the painful position of either allowing the disease to proceed unchecked, or attempting to remedy it by means not only useless, but injurious. In order to overcome this difficulty, I tried a plan different from any previously employed, which consisted in the introduction of a grooved director through the stricture, and free division of the contracted part of the canal by external incision upon the guide thus afforded. I have now performed this operation in upwards of sixty cases—in every instance with the effect of accomplishing complete dilatation of the stricture, and entirely removing the patient's symptoms; and without hemorrhage or any other serious bad consequence. The safety and efficacy of the treatment being thus established, the only room for question in regard to the estimation of its value is the permanency of recovery. I am here able to say, that in cases of the very worst kind, the relief may prove permanent, the patient requiring no farther assistance, or merely the introduction of a full-sized bougie at distant intervals; and if this be the fact, it seems reasonable to expect that the result admits of being rendered uniformly favourable through attention to the circumstances concerned in determining its success and failure. An imperfect division of the contracted part—want of care to pass instruments while the urethra is healing, as all injuries of the canal are apt to occasion strictures when this precaution is neglected—and subsequent exposure to a repetition of the causes which give rise to the disease—may prevent the advantage gained from lasting so long as could be desired. The first of these circumstances tending to cause relapse did not originally occur to me, but was suggested by facts falling under my observation, which led to the persuasion that as a stricture gives the canal a sand-glass form at the part affected, it is not sufficient to cut merely the narrowest portion—the conical-shaped contraction on each side of it also requiring division; so that, instead of being limited to a quarter or half, the incision should extend a whole inch through the coats of the urethra. In regard to the after-treatment, as wounds and bruises of the urethra are apt to induce strictures, unless a full-sized bougie be passed occasionally until the part affected recover from the injury which it has sustained,

there can be no doubt that if this precaution is neglected after the operation for stricture, there must be a risk of relapse. And it is no less obvious, that however perfectly the patient may be relieved from an existing stricture, he cannot reasonably claim exemption from the production of another, if he exposes himself to the exciting causes. It will, therefore, be prudent to enjoin such a mode of life as may, as far as possible, afford protection from the influence of circumstances calculated to act in this way. With due attention to all these points, it is, I think, reasonable to expect that the obstinate forms of stricture in question may be effectually remedied by an operation of the utmost simplicity and most perfect safety; and that the relief will generally, if not always, prove permanent. The case which has led to these remarks is thus related in the hospital books:—

"Thomas Atkinson, aged 34, a tall, well-built man, of healthy appearance, was admitted into the Surgical Hospital, May 20th, 1852. Is a native of the county of Armagh,—and has been sent thence by a surgeon, who has treated him for stricture of the urethra for upwards of two years.

"The following is the history he gives of his complaint:—Rather more than two years ago, after exposure to wet and cold, he was attacked with a discharge from the urethra, unaccompanied by pain or scalding. Previous to this, he had not noticed any diminution of the stream in which he passed his water, but soon afterwards it decreased rapidly. The surgeon, after treating the disease constitutionally for a short time, passed a small bougie, and discovered a stricture of the anterior part of the scrotum. This was quickly dilated, so that No. 10 could be introduced with ease; but, notwithstanding, his micturition was in no way improved. In an hour or two after the instrument had been withdrawn, the stream was as small as ever. Frequently he suffered from complete retention for hours together, and was only relieved at length by having an instrument passed, immediately after which he could make water in a tolerable stream, and without pain or effort. In consequence of the continuance and obstinacy of the complaint, 'caustic' was applied, eighteen months ago, to the strictured part of the canal. It caused him great pain at the time, and the difficulty afterwards in voiding urine was considerably increased—the stream was smaller—the retentions more frequent—and the pain and discharge much greater. Three months after, the 'caustic' was again applied, and again his sufferings were aggravated; a hard knot appeared on the urethra, opposite the seat of stricture, and he was rarely able to pass a drop of urine without first introducing a bougie. A year ago a third application of the 'caustic' was made, and he was directed to keep a large elastic bougie, No. 10, constantly in the urethra, and never to remove it except when he desired to pass water. He wore it for two months night and day; and during this time did not suffer any pain or inconvenience, beyond that arising from the instrument. Two days after renouncing its use, all the symptoms of stricture had returned as severely as before, and ever since he has been obliged to pass an instrument before micturating. During the last three months he has always carried a common fowl's feather, about the size of a crow's quill, in his pocket, and has used this instead of a bougie, passing it through the stricture, allowing it to remain for about a minute, and then withdrawing it; he has been able to pass his water in a good stream. If he neglects to make water for many minutes after taking out the quill, he is obliged to re-introduce it before he can pass a single drop.

"On examination, No. 6 bougie is found to pass without difficulty fairly into the bladder. A stricture is encountered three inches and a half from the meatus, which gives way readily upon slight pressure, but grasps the instrument when withdrawn; and a corresponding part externally, a narrow thickened induration is felt by the fingers placed on the under surface of the urethra."

This case affords a very distinct example of the contractile form of stricture, and well illustrates the futility of dilatation as a means of remedy for this condition. In all strictures remediable by dilatation, nothing can be desired better than the simple metallic bougie, which, introduced gently at sufficiently long intervals of time, excites absorption of the thickened canal, and gradually restores it to a healthy state. But the would-be improvers, who propose to dilate the urethra upon the same principle as they would stretch the finger of a glove, will meet with little success, except in those cases, of no rare occurrence, where the contraction exists only in imagination; and whether they attempt to accomplish their

object by separating the branches of an instrument passed through the stricture, or endeavour to do so by introducing a succession of tubes upon a guide—after the fashion of that curious contrivance, "the Dublin Railway Catheter"—will either effect no good that could not have been attained more easily and safely by the bougie, or seriously endanger the life of the patient. The patient being now placed upon the table with his knees bent, and supported so as to expose the perineum, I introduce a grooved director through the stricture, and then, while the scrotum is held up, make an incision about an inch in length through the integuments, exactly in the line of the raphé. I next insert the knife into the groove of the director below the stricture, and push it forward so as to divide the contracted part of the canal nearly to the same extent as the external incision. The director being withdrawn, I pass a silver catheter (No. 8), into the bladder, and secure it by proper tapes. The operation, you see, is thus completed in less time than would be required for its description, with the loss of not more than a teaspoonful of blood, and with so little pain, that a smile has never left the patient's good-humoured intelligent countenance.—*Monthly Journal of Med. Science, July*, 1852, *p.* 33.

92.—STRICTURE OF THE URETHRA AND PERINEAL SECTION.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson, in remarking upon a case he had related in a lecture upon this subject, observed that it brought forward the questio vexata as to whether the operation of perineal section, as performed by Professor Syme, for the cure of certain forms of permanent stricture of the urethra, should be admitted as an established practice, or should, on the other hand, be discarded altogether from the domains of surgery. Mr. Coulson remarks:]

Before arriving at the question of perineal section, it may be well to offer a few remarks on strictures and their treatment in general. Stricture of the urethra, as the word implies, is a narrowing or contraction of the canal at some point; but the cases in which stricture, in the sense I now use it, applies, are those in which the preternatural diminution of the calibre of the canal depends on organic change in its walls or in the subjacent tissues. It is thus distinguished from obstructions produced by tumours, scrofulous deposits, abscesses, &c. The contraction of the canal may be either temporary or permanent; that is to say, spasmodic or organic. I have now to deal with the latter kind only. It arises in all cases, I believe, from more or less inflammation of the mucous or sub-mucous tissue of the urethra at certain points. In many cases of stricture, particularly those of recent date, the mucous membrane of the urethra is alone involved. It is injected, has become thicker than natural, is more dense, and has lost its normal elasticity. It is probable that more or less congestion of the submucous tissues exists to a slight degree, but this has disappeared after death. In more chronic cases the subjacent structures are also involved; and here the mucous membrane of the affected part may sometimes present so much of a natural appearance as to lead one to imagine that it had never been attacked by the inflammatory process. It is, however, presumed that the inflammation has extended from the mucous to the subjacent tissues, and that, as the latter became affected, the former regained its natural aspect from the subsidence of the inflammation. You are not, however, to consider that the organic changes which take place in stricture are confined to the mucous lining of the urethra. In the vast majority of cases of permanent stricture which have continued for any length of time, chronic inflammation has extended to the tissues surrounding the parts primarily affected, and has produced a series of changes which it is of great importance that you should be familiar with. These changes materially affect the treatment that ought to be adopted for the relief of stricture, and, as you will presently perceive, they bear an important relation to the question of perineal section. They have been too much overlooked by the majority of surgeons who have written on stricture of the urethra; but they were not overlooked by him to whom modern surgery owes so much—I allude to John Hunter. In his admirable collection you will find the pathological

effects of stricture illustrated in every form and degree, from the most simple to the most complicated cases; and you cannot spend a few hours better than in an attentive examination of them.

The most usual form of change in the extra-urethral parts is chronic inflammation of the tissues immediately subjacent to the points of the canal in which the stricture was primarily formed. These tissues become more or less hypertrophied; the interstices are filled with coagulable lymph; and as this becomes gradually organized, the tissue is converted into a dense fibrous substance of great resisting power. Sometimes the tissue becomes uniformly dense and callous. In many other old cases the mucous and submucous tissues are confounded together into a hard compact mass in which no distinction of tissue can be traced; the spongy tissue has been involved, and forms a hard, thick wall round the canal, pressing it so closely that hardly a drop of urine can pass outwards, or the finest bougie be introduced into the bladder. Sometimes a very large extent of the corpus spongiosum is converted into a ligamentous substance; in other cases the induration is fibrous; these latter usually occur in the neighbourhood of the bulb, and are extremely obstinate against dilation. These long and hard indurations are often so prominent that they can be distinguished by pressure on the perineum. I have insisted at some length on these pathological changes, because it is necessary for you to remember that stricture is hardly ever, in old cases at least, confined to the mucous wall of the urethra, and because a knowledge of these changes will better enable you to appreciate the various modes of treatment which have been proposed for the cure of stricture.

But the immediate and proximate effects of stricture on the neighbouring tissues are not the only ones we have to consider. It will be impossible for you to pass any correct judgment on the relative value of different curative methods, without having some idea of the various changes which follow consecutively on stricture of the urethra. The slightest contraction of the canal may give rise to a number of secondary effects; while those resulting from long-standing or severe stricture are of the most formidable nature, and often terminate in death. All these secondary effects are more or less connected with the obstacle opposed by the contraction to the free discharge of urine. One of the earliest and most common is inflammation of the urethra, behind the constricted point. This inflammation may be of various degrees: when of long standing it may give rise to ulceration of the walls of the canal, or the deposition of numerous small abscesses in its substance; when carried still farther, when the stricture is so contracted as to produce from time to time complete retention of urine, the consequences are dreadful. The membraneous portion becomes dilated and irritated by the contact of urine highly charged with salts, and driven against it with extreme violence during the efforts to make water. The inflammation extends to the deep-seated tissues; the walls of the urethra may give way from laceration, or ulceration; the urine becomes extravasated into the cellular tissue of the perineum, threatening the life of the patient; and if, by prompt and decisive measures, this be preserved, fistulous openings in that part, with all their well-known consequences, may be established. In other cases, particularly when no artificial exit for the urine exists, inflammation involves the prostate gland, giving rise to hypertrophy or abscess in the substance of that organ. The bladder itself is often attacked with chronic cystitis; its walls become thickened; pus is secreted; the inflammation extends to the ureters; and, finally, the kidneys themselves become involved. It is unnecessary for me to enumerate the constitutional symptoms which accompany such a state of things. Even where the secondary lesions are less severe, the patient always suffers more or less in his general health; he is subject to frequent rigors, with febrile accesses; he loses flesh, and becomes irritable; the digestive organs become disordered; the constant dribbling of water renders him an object of disgust to himself and others, while the constant desire to pass his urine prevents him from enjoying a single night's sleep. In short, it is difficult to conceive a more distressing state than the one to which so many patients labouring under old stricture are reduced. Hence the desire which they generally express to be relieved of their disease at any risk.

Stricture of the urethra is most frequently met with at the anterior part of the membraneous portion of the urethra, or in the spongy portion. It sometimes hap-

pens that both parts are affected at the same time; and authors speak of as many as six, seven, or eight strictures in the same individual. In such cases, the canal may become tortuous, and almost obliterated at several points; and the same effect may arise from long indurated stricture in the spongy portion of the urethra. Mr. Syme denies that any stricture is ever "truly impermeable." But this is a serious error, into which M. Amussat has likewise fallen. Even if we lay aside the cases in which some of the most distinguished and dexterous surgeons in this and other countries have failed to pass any kind of instrument after repeated efforts, we have proof, from post-mortem examination, of the complete impermeability of the urethra. In Chopart's work on the Urinary Organs (page 323), you will find an example of complete obliteration of an inch of the canal, observed in a dead body. M. Delmas observed a similar fact at the Hôtel Dieu. M. Cruveilhier relates another in his 'Pathological Anatomy.' Besides, we can readily understand, from analogy, how an inflamed part of a contractile canal may become totally impermeable, whenever the fluid to which it gives passage in a normal state is turned away into another channel.

Let us now briefly consider the means usually employed for the treatment of stricture of the urethra. You must have a clear idea of these different methods, of the effects each is intended to produce, and of the cases to which they are respectively applicable, in order to understand why any preference should be given, under certain circumstances, to the perineal section.

The surgical treatment of stricture may be described under three heads—viz., dilatation, cauterization, and division. I shall not detain you long on either of the former, as I hasten to arrive at division, which more immediately concerns us in connexion with our case.

The treatment of stricture by dilatation has been conducted on very different principles by different surgeons. Sometimes the dilatation is momentary and gradual, the bougie being allowed to remain in for a few minutes at a time, and the size of the instrument gradually increased, until the diameter of the strictured part acquires the same size as that of the rest of the urethra. This method is applicable to a large number of cases, and is the one usually resorted to by the great majority of surgeons in this country.

The second mode of employing dilatation may be called the permanent, for the instrument is allowed to remain constantly in the bladder. The object here is not only to dilate the canal, but by the pressure of the instrument to excite such a change in the vital properties of the parts as shall lead to absorption of the effused coagulable lymph in the subjacent tissues. The cases to which permanent dilatation, either by metallic sounds or the gum catheter, are most applicable, are, according to Sir Benjamin Brodie—

"1st. Cases of old gristly or cartilaginous strictures, which the common bougie is incapable of dilating; 2nd. Cases complicated with false passages; 3rd. Cases where the urethra has become irregular in shape; and 4th (finally), those in which each introduction of a bougie is followed by rigours or constitutional disturbance."

Some surgeons have not hesitated to employ what I would denominate forcible dilatation in the treatment of stricture. A solid conical bougie, or sound, is forcibly passed or thought to be passed, by some, through the stricture. No surgeon in this country would think of having recourse to the forcible catheterism of Boyer. Other surgeons have invented ingenious instruments, which open after they have been passed beyond the stricture, and dilate it gradually; and in some cases in this hospital this plan has been adopted with success.

Although the treatment of stricture by dilatation is the one most generally used, and the one, moreover, attended with the most beneficial effects, it is not free from objections. Permanent dilatation of old and firm strictures can seldom be effected without giving rise to more or less irritation and other unpleasant accidents. The instrument may produce little pain at first, but it often becomes intolerable. The passage of the urine over the points which it has irritated also excites severe pain; the constitution sympathises, fever sets in, with rigours, &c., and the patient refuses to continue the treatment. Another objection which has been made to the method by dilatation is, that the relief which it affords is seldom permanent. The patient fancies himself cured as soon as he can make water with comparative facility; but this amelioration is often of short duration. Within a short time after the with-

drawal of the bougie, the urethra suddenly contracts, and the difficulty of making water becomes as great as ever. This is a fact familiar to all surgeons. Permanent dilatation seems to act in an unfavourable manner on the sensibility of the canal, which is made to pass suddenly from a state of contraction to one of forced distension; the elasticity of the canal is not restored by it, and the cure is consequently less durable. Finally, dilatation by bougies is inadmissible in certain cases of hard and very irritable stricture of the spongy portion of the urethra—a point to which I shall again refer.

Cauterization of the stricture was employed by the surgeons of the fifteenth century, who considered stricture as consisting in vegetations, or fungous growths. Recommended by John Hunter, it has been extensively employed in this country by Mr. Whateley, Sir Everard Home, and Mr. Wade; and in France by Ducamp and Lallemand. The substances employed for cauterization are the nitrate of silver and potassa fusa. They are usually applied to the anterior surface of the stricture by means of a bougie, the extremity or point of which is armed or charged with one of these substances. Some of our best surgeons consider the application of caustic substances to the anterior wall of an impermeable stricture, the extent of which we have no means of ascertaining, as highly dangerous. I do not entertain this fear, having myself used the armed bougie extensively. My difficulty has been the inability to do good in some cases with this agent. Perhaps I might express the general opinion of the profession by saying, that cauterization is chiefly applicable to ring strictures of the membranous portion of the urethra, accompanied with a tendency to spasm.

We now arrive at the third general method of treating stricture; I mean that by incision of the strictured part. Here we have a capital distinction to make, according as the incision is made from within outwards, or from without inwards; the former comprising the scarifications and incisions of Mr. Stafford, MM. Amussat, Leroy d'Etoilles, and many others; the latter including the old French operation of "la boutonnière," and Mr. Syme's modern one of the perineal section.

Division of the stricture from within outwards is an operation on which it is not easy to pass a correct judgment, from want of a sufficient number of facts. It is certain that the instruments now employed enable us to perform the section without danger of cutting too far; and one of the great objections against the method is thus obviated: when judiciously employed, it may be of use in some cases of hard and long stricture, situate not very far down in the urethra; but it cannot, for obvious reasons, be applied to strictures which only admit a very small instrument, still less to those that are completely impervious. It remains then to consider the perineal section, or division of the stricture from without inwards, through an incision of the skin, tissues of the penis, and walls of the urethra.

Before describing the operation of the perineal section, I may say a word or two on its history. Mr. Syme was the first, in this country, who proposed and practised division of the stricture from without inwards, on a grooved instrument, introduced by the orifice of the urethra through the contracted point, and with the idea of curing the stricture itself, not of merely relieving any retention of urine which may be consequent on it; but an operation somewhat similar to this was well known to, and often practised by, the French surgeons more than a hundred years ago. In Desault's treatise on Diseases of the Urinary Organs, edited by Bichât (t. iii p. 330), I find the following passage. Speaking of the boutonnière, or button-hole incision of the urethra, Desault says, "On ne suit pas toujours le meme procédé en pratiquant la boutonnière sur le canal de l'urétère. Lorsque l'on peut introduire un cathéter dans la vessie, on se sert de cet instrument pour faire sur sa cannelure l'incision du canal et conduire une gorgeret. Ici l'opération ne presente pas plus de difficulté ni de danger que l'incision pour la taille au grand appareil. Mais aussi elle n'offre aucun avantage dans le traitement des rétentions d'urine; car, puisque on a pu introduire un cathéter, il eût été également possible de passer une sonde, qui eût servi à l'évacuation de l'urine et rétabli par son séjour la liberté du canal."

This passage clearly proves that the old operation of "la boutonnière" was sometimes performed, not only by passing down a grooved director to the anterior edge of the stricture, but also by passing the instrument *through* the strictured

point into the canal. This latter manœuvre executed, the perineum was divided into the stricture slit open on the director.

The operation alluded to by Desault is supposed by some to have been merely employed for the relief of retention of urine, and not as a remedy for stricture of the urethra. This is an error; for on consulting Desault in the original, at page 245 of this work, where he treats of stricture, and not of retention, I find the following words:—"L'opération connue sous le nom de la boutonnière, quoique en apparence mieux adaptée à la nature de la maladie, est presque toujours ou inutile ou dangereuse. Elle est inutile, si pour la pratiquer on peut passer un cathéter, ou une sonde cannulée; puisque alors on aurait pu de meme y porter une sonde creuse. Elle est dangereuse, si l'on ne peut etre guidé par ces instruments; puisque alors on fait les incisions au hazard, et que l'on peut manquer le canal, et diviser des parties dont la lesion est suivie d'accidents plus ou moins graves. Les caustiques recommandés par Hunter nous paraissent tout à la fois incertains dans leurs effets et très dangereuses dans leur suite."

"The operation known under the name of boutonnière, though apparently better adapted to the nature of the disease, is almost always either useless or dangerous. It is useless, if the surgeon has been able to pass a grooved director, for the purpose of operating; because, in such case, he might just as well introduce a hollow sound. It is dangerous, if the surgeon has no director to guide him: for then he makes his incisions at hazard, may miss the canal, and divide parts the lesion of which is followed by more or less serious accidents. The caustics recommended by Hunter, appear to me both uncertain in their effects, and very dangerous in their consequences."

Again, Chopart distinctly speaks of the boutonnière, or a mode of operating for stricture, independently of retention of urine. At p. 310, vol. ii. of this work on the Urinary Organs, he says:—"The indurations and callosities of the walls of the urethra, the bridles and cicatrices of this canal, form the chronic and permanent strictures which most frequently oppose the passage of the catheter." He then discusses the treatment of stricture by bougies, caustics, &c.; and at p. 313, speaks of the boutonnière as a mode of treatment, giving a case in which he tried it, but failed. I mention these facts in no way to detract from Mr. Syme's merit, but to show that the operation had been previously entertained by the French surgeons.

As far as I have been able to make out the boutonnière was performed in three ways. The first is that noticed by Desault, and identical with Mr. Syme's operation. In the second mode a grooved director was passed down to the impermeable stricture and pressed close against its anterior surface; the surgeon now cuts down through the perineum on the director, and when he has arrived at the groove he continues his incision forward through the stricture until he has divided it through its whole length and is able to pass a catheter into the bladder. The third method of performing the boutonnière is the one now, I believe, generally adopted by the French surgeons. A grooved director is passed down to the anterior surface of the stricture, as in the former method, and there firmly held by an assistant. The surgeon now cuts down on the membranous portion of the urethra, which he opens, and passes a curved director from behind forwards, holding its point as much as possible in the same line as that of the instrument introduced through the orifice of the urethra. In the majority of cases, the instruments would come very nearly in contact, and serve as a guide to the incisions made through the stricture. It may be objected that it is a difficult matter to cut down on the membranous portion of the urethra without any guide; but the surgeon who has a competent knowledge of anatomy cannot find much difficulty in the operation, and without a knowledge of anatomy he has no business to practise the operative part of the profession. This is the operation recommended by Mr. Guthrie in his lectures on stricture, recently published.

I must now describe to you Mr. Syme's operation, or the perineal section, and I will employ his own words. The patient having been placed under the influence of chloroform, is "brought to the edge of his bed, and his limbs are supported by two assistants, one on each side. A grooved director, slightly curved, and small enough to pass readily through the stricture, is next introduced, and confided to one of the assistants. The surgeon sitting or kneeling on one knee, now makes

an incision in the middle line of the perineum or penis, wherever the stricture is seated. It should be an inch or an inch and a half in length, and extend through the integuments, together with the subjacent textures exterior to the urethra. The operator then taking the handle of the director in his left hand, and a small straight bistoury in his right, feels, with his fore-finger guarding the blade, for the director, and pushes the point into the groove behind, or on the bladder side of the stricture, runs the knife forwards, so as to divide the whole of the thickened texture at the contracted part of the canal, and withdraws the director." A silver catheter is now allowed to remain in the bladder for forty-eight hours, after which it is to be withdrawn. After eight or ten days a moderate-sized bougie should be passed, and its introduction repeated once every week or fortnight for two months. Mr. Syme makes it an indispensable condition of his operation, that the stricture should be permeable; in other words, should admit the passage of an extremely small director at least; and in order apparently not to limit the usefulness of his operation, he asserts that there is no truly impermeable stricture. He also condemns, in unmeasured terms, the old operation of cutting into the perineum in search of the obstructed canal, without any further guide than the point of a catheter, introduced, not through, but merely down to the contracted point.

I shall now endeavour to explain to you on what principles it appears to me that the operation of perineal section, in its most extended sense, should be adopted. To my mind, the term perineal section should be applied to an operation in which the strictured part of the urethra is divided from without inwards, no matter whether the surgeon has been able to pass a director or not, or whether he carries his incision of the stricture from before backwards, or from behind forwards. These latter circumstances merely affect the safety and facility of the operation, without in any way altering the principles on which it is conducted. You will now naturally ask me what are these principles? You may desire to be informed, whether, as some distinguished surgeons affirm, the perineal section should be banished altogether from the practice of surgery; or to know, admitting its usefulness, in what cases and under what circumstances, you may be justified in having recourse to the operation? These points I shall now endeavour to clear up, though with a certain degree of diffidence; for I must confess to you, from the outset, that the profession is greatly divided on the subject. We must now, however, forget the old adage, "Doctors differ." Few important improvements have ever taken place in surgery without exciting much discussion and giving rise to considerable diversity of opinion. It has taken more than two hundred years to bring lithotomy to its present degree of perfection. I remember, myself, when lithotrity was condemned as an inefficient or even dangerous proceeding; and to come nearer home, consider how much the profession has been divided, ever since the days of John Hunter, on the utility of caustic for the treatment of stricture.

As for the perineal section, I am one of those surgeons who consider it for the most part easy of performance, exempt from any considerable danger inherent to the operation itself, and highly effectual for the relief of such cases as it is adapted to. It therefore remains for me to explain what these cases are; under what circumstances I think the surgeon may have recourse with advantage to the perineal division of a strictured urethra.

I am disposed to recognise two sets of cases in which the perineal section may be employed. The first set, where no instrument can be passed through the stricture. Mr. Syme, as I informed you, rejects all such cases; but I shall presently give my reasons for dissenting from him. The second class, where a curved director can be introduced into the bladder; and here Mr. Syme's operation, properly so called, is undoubtedly the most safe, easy, and effectual proceeding that can be adopted. But this distinction of permeable and impermeable strictures is not enough. We must go further, and endeavour to determine what circumstances in each class should determine the surgeon to select external division of the stricture in preference to the other modes of treatment generally employed. Let us first consider impermeable stricture; and here, to avoid repetition, I would beg of you to call to mind what I have already said on the changes produced by long-standing stricture in the tissues of the urethra, or subjacent parts; in the prostate, bladder, or kidneys; and on the general health and comfort of the individual.

Here is a case of old stricture of the urethra. The walls of the urethra are

thickened and cartilaginous; you can feel the cord in the perineum. After many attacks of retention of urine, complete stoppage takes place; the patient suffers from the effects of that distressing occurrence; no instrument of any kind can be passed into the bladder; yet it is imperative to afford relief, or your patient will die. What is the surgeon to do in such a case? Many will answer: Puncture the bladder through the rectum, perineum, or above the pubes, and then proceed to treat the stricture. But the circumstances of the case may, as Mr. Bransby Cooper has justly observed, lead you to conclude that the fibrous and hardened textures will not yield to other modes of treatment, after the relief of the retention by puncture, but that the stricture will rather make progress, and tend to permanent obliteration of the canal. Dilatation is here out of the question, since no instrument can be passed. There is no time for the use of caustics, even if their employment were suited to the case under other circumstances; and I cannot but think that the perineal section or boutonnière, performed either according to the first, or perhaps better still, the third method, is the best operation that can be employed, not only for the relief, but for the cure of your patient.

In other cases, instead of retention of urine, we have laceration or ulceration of the urethra, with extravasation of urine and fistula in perineo. These accidents may have continued for a considerable time before you see the patient. It is impossible to pass an instrument; and you have reason to conclude that a large portion of the spongy tissue is reduced to a gristly cord. The advocates of caustic confess that they will probably fail to effect any benefit in cases of this kind; dilatation by bougies, or internal scarification, or division is out of the question. Must the patient be abandoned to his fate? Does surgery hold out no hope of relief?

For the fistulous openings, all surgeons are agreed that they should be freely divided; and experience proves that the stricture may be divided at the same time by an incision carried forwards from the membranous portion of the urethra. Mr. Bransby Cooper has related two cases from his private practice, in which the operation was perfectly successful; and it may be safely affirmed that no other method would have been attended with such speedy and effectual relief.

What I have just said will apply equally to cases of impermeable and cartilaginous stricture occupying a considerable portion of the canal, but accompanied by constant dribbling of water, instead of retention. Although no instrument can be passed, the urine comes away in drops, and after violent efforts. Such cases often present themselves in practice.

The following case is an illustration of this form of the disease, and of the advantages of the operation for it—William J., aged forty-four, was admitted into St. Mary's Hospital, October 13. He had been the subject of stricture eight years. At the commencement of 1849 he was seized with retention of urine, and has suffered from it occasionally ever since. At the time of his admission he passed his urine in a very fine stream, or only drop by drop. A firm obstruction existed five inches down the urethra, through which no instrument could be passed; just anterior to this there was a false passage. On the 15th of October I divided the stricture through the perineum; a grooved staff was introduced down to the stricture, and the urethra opened for an inch and a half just above it. The stricture was then divided, and the staff readily entered the bladder. This was withdrawn, and a No. 8 silver catheter introduced, and retained in the bladder forty-eight hours. There was a good deal of bleeding after the operation, but it stopped in the evening. A No. 8 silver catheter was introduced every third day whilst he remained in the hospital, and retained half an hour at each introduction. The patient had not had a single bad symptom; the wound healed readily, and the patient was discharged at the end of five weeks. I saw the patient two or three months after, and the largest-sized catheter could be easily passed into the bladder.

You will observe that the operation here performed was not Mr. Syme's, properly speaking, but the old boutonnière. Mr. Syme rejects it altogether from practice, on the ground of its establishing an imperfect course, constantly disposed to contract, and inconvenient from its tortuous direction, and from the immediate hazard of failure in passing the catheter into the bladder. The operation, such as it is often performed here, is certainly more difficult than Mr. Syme's, and it may occasionally fail; but I would observe that in the numerous operations for imper-

meable stricture by external incision, performed by Mr. Fergusson, Mr. B. Cooper, myself, and others, no serious difficulty—none the surgeon was unable to overcome—has as yet presented itself. Such a case might, however, occur; Chopart relates a remarkable one; but they are rare. Besides, I would again ask what is the surgeon to do with such cases? He must either leave his patient to be worn out by a lingering and most painful disease, or he must make some attempt for his relief. The use of caustic potass is the only other alternative left; but the advocates of potass confess that it is not applicable to the cases now under consideration; and hence the boutonnière should, in my opinion, be had recourse to. In fact, nothing else is left for us to do. It seems, indeed, strange that Mr. Syme should reject the operation for cases in which it is the only possible remedy, and yet adopt it, with a slight modification, for others, when the urethra being permeable, it might be alleged that cautious dilatation would afford great relief, if not effect a cure. The only valid objection against the operation is the difficulty of sometimes performing it, because we have no steady guide for the cutting instrument; but in these complicated cases much of the difficulty may be got over by employing the third species of boutonnière, which I have described.

We now come to Mr. Syme's operation for permeable stricture. No one pretends that this operation should be applied to the treatment of stricture indiscriminately. We have, therefore, to inquire under what circumstances the surgeon is justified in having recourse to it; for many of its opponents admit that it may be sometimes indispensable. Mr. Wade acknowledges that Mr. Syme's operation is applicable to cases "where much induration of the corpus spongiosum exists; for dilatation would only excite and increase the contraction, and we cannot hope to relieve the induration entirely by caustics." Mr. Wade would likewise extend the applicability of perineal section to some cases from mechanical injury of the urethra, where we have a hard gristly cicatrix, with perhaps fistulæ in the perineum; also to cases where the urethra has been lacerated, and a hard cicatrix has formed in the seat of the injury. Finally, cases of hard, contractile strictures, not the result of mechanical inquiry, which have resisted all other means of a milder nature, and where the powers of the patient are suffering considerably—here, according to Mr. Wade, perineal section may be required. This, you perceive, gives us a pretty wide field.*

The cases for the relief of which Mr. Syme originally proposed his operations are "those vexatious ones in which the constricted canal is unyielding, and manifests a constant tendency to contract, perhaps even more closely than before, after being partially or completely dilated." In these cases the constitution is much disposed to sympathize with every change in the local disease; rigors and febrile attacks often occur on every attempt to pass a bougie, and what have been called "milder methods" of treatment almost invariably fail to afford anything like permanent relief. This peculiarity of old strictures has been noticed by all surgeons. M. Civiale, to whom we owe so much for the diagnosis and treatment of urinary diseases, observes that the fibrous and indurated stricture which exists near the bulb of the urethra is extremely obstinate against every attempt at dilatation; and again, that when the stricture occupies a great extent of the spongy portion, is hard, and when the canal is much reduced in calibre, cauterization must be rejected, and dilatation is, for the most part, insufficient to produce a cure. The same distinguished surgeon likewise insists "that nearly all old strictures of the spongy portion of the urethra are so dense, so resisting, and have such a tendency to contract, that dilatation has little effect on them, while cauterization only seems to increase the state of irritability." You may, perhaps, obtain an explanation of these facts by remembering what I have said on the changes which the corpus spongiosum and subjacent mucous tissues so often undergo in old and severe strictures. In many cases of fibrous stricture, the parts surrounding the contracted canal are converted into ligamentous tissues of a highly contractile nature; and unless the tissue be carefully divided through, every attempt to cure by dilating or cauterizing will not only fail, but increase the disposition to contract, and prolong the treatment while it aggravates the disease.

* In the 'Lancet,' July 3, p. 19, Mr. Wade corrects Mr. Coulson with respect to these quotations of his opinions. [See p. 210 of this vol.]

But there is one species of stricture—the form, indeed, under which my patient laboured—which has not been described apart by writers, although it is the one above all to which Mr. Syme's operation is especially applicable: I now allude to traumatic stricture. Here the complaint arises from some mechanical injury, falls, blows, &c., to the perineum, and it is at once the most severe and refractory form which the surgeon can meet. The case of complete obliteration of the canal, recorded by Cruveilhier, to which I have already alluded, was one of this kind; and, although the urine dribbled away during life, the most careful dissection was unable to detect any trace of canal in the dense fibrous cord which constitutes the stricture.

Traumatic stricture is often developed immediately after the receipt of the injury, but in other cases the contraction does not take place until many years afterwards. In my case, the patient had been struck by an iron bar eight years ago. M. Civiale relates another, where the characteristic symptoms of stricture did not appear until ten years after the injury. From the nature of the exciting cause you can readily understand how such strictures are often of considerable extent: authors mention several inches, but this is rare. However, it is certain that contractions of the urethra, from mechanical injury, are generally long; they are also hard. Another peculiarity of traumatic stricture, is its extreme tendency to contract. Even in cases where a bougie can be borne, and temporary improvement results, experience abundantly proves that the cure is far from being complete, for the contraction returns, and sometimes with remarkable rapidity.

In severe cases, as I have observed before, a considerable portion of the canal is contracted, and if to this state we join hardness, tenseness, and fibrous adhesion between the mucous membrane of the urethra and its subjacent tissues, you have a form of disease which defies all the modes of treatment hitherto employed.

"In such cases (says M. Civiale) even should a dexterous hand succeed in introducing a small sound, we must not count on obtaining a cure, no matter what treatment we employ, whether it be dilatation, cauterization, or incision (internal). I have seen every method of treatment fail, though continued for a long time and conducted with the utmost prudence."

Here then is the testimony of an impartial witness. Such cases of stricture are incurable by ordinary means. Must we abandon our patient? Does surgery afford no hope of relief? I think it does. It is in such cases, especially, that I would recommend Mr. Syme's operation. I shall briefly mention one of the cases in which I had recourse to it.

The case was that of a patient, aged 58, who had laboured under stricture for nearly thirty years. It had been divided by the lancetted stilette, and periodically dilated; but during the last two years it had become so much contracted as not to admit a No. 1 bougie. The water came away only drop by drop, and at times retention occurred, which was always relieved by the application of the potassa fusa. Mr. Syme's smallest grooved staff was passed, and an incision an inch and a half in length was made, commencing from close to the scrotum, and carried down towards the anus. The groove of the staff was at once reached, and the stricture divided. A No. 8 silver catheter was introduced, and a considerable quantity of fœtid, alkaline urine discharged. There was a little bleeding at night, which was easily stopped by pressure. The catheter was retained in the urethra forty-eight hours, and introduced every third day for a fortnight, when the patient was enabled to resume his duties. At the present time the largest catheter (No. 10) which the orifice of the urethra will admit passes readily into the bladder.

Mr. Syme's operation is, as you perceive, both easy and safe, so far as the operation itself is concerned. Whatever difficulties the surgeon may experience in endeavouring to divide an impermeable stricture, there are none here. He cannot meet with any obstacle to cutting down on the groove of the director, or dividing the strictured parts, however dense or extensive the constriction may be; for the groove of the staff is a safe and easy guide, which will enable even the young surgeon to operate with comparative facility.

But various objections have been raised against the operation, both as regards its principle and its effects. These I shall now notice. Many surgeons criticise

Mr. Syme's operation on the pretext that it has been proposed as a system of treatment for stricture in general; but this is an unfair statement of the case. Neither Mr. Syme, nor any advocate of his operation with whom I am acquainted, ever proposed perineal section as a general system. On the contrary, it has been expressly stated, over and over again, that division of the stricture from without inwards, should be confined to such cases as are not amenable to ordinary treatment; where the tendency to contract is so great as to leave no hope of cure from dilatation; where the irritability of the urethra is so excessive as to render the repeated introduction of bougies not only insupportable from pain, but dangerous from the constitutional disturbance they excite. Such cases frequently occur, and we might fairly ask those who reject Mr. Syme's operation unconditionally, what other mode of treatment they would recommend under such circumstances?

Dilatation is inadmissible; cauterization is also inapplicable in many of these cases, from the seat, extent, and nature of the stricture. You must, therefore, either divide the strictured parts, or wait; and if you wait too long, the continued and increasing impediment to the discharge of urine will, in nine cases out of ten, reduce your patient to a state of insupportable distress, if not irremediably compromise his existence by the secondary effects produced on the prostate, bladder, kidneys, and general health.

The next objection offered to division of the stricture is its insufficiency to effect a radical cure; after some months or years, it is said, the disease returns as bad as ever. We have not yet sufficient experience of Mr. Syme's operation to decide this point in a positive manner. Relapses may, and do, occur. The operation is not infallible, but I think I may safely say that relapses are not so frequent as after other methods of treatment; and this may be rationally explained by the fact that the new tissue which unites the edges of the divided stricture does not partake of its fibrous or ligamentous nature. It has been said, again, that the thickened and diseased tissues are merely divided by the knife, but not removed; and hence, that the operation is inferior to dilatation or cauterization. This is an unfair way of putting the matter. We acknowledge that bougies should be employed whenever their use holds out any reasonable prospect of success; but the perineal section is not proposed as a substitution for dilatation: we have recourse to it in cases where the bougie cannot be used, or where the patient is unable to bear its introduction. I have already alluded to this latter point. In one of Mr. Fergusson's cases, every attempt to pass a bougie was followed by attacks of shivering, so violent that they might easily be mistaken for intermittent fever; and although such attacks often subside without any further disorder, they are, in other cases, the forerunners of fatal mischief. They are not confined to stricture, but are often observed in connection with calculus, and the introduction of instruments into the urethra.

M. Civiale relates a very remarkable example in his last work on 'Calculous Diseases.' The patient had occasional attacks, which were mistaken for ague by his medical attendants, and treated with quinine. An instrument was passed into the bladder, for the purpose of ascertaining whether the rigors and fever, &c., did not depend on stone. This simple operation produced still more violent rigors, which resisted every kind of treatment; the patient died, and after death, purulent infection was found to have been the cause; the kidneys, as in my case, were filled with purulent deposits.

As to the objection drawn from the circumstance that the new passage is made through diseased tissues, I would simply remark, that if any passage at all is to be established, it must necessarily be formed in part by these tissues. We know of no method by which they can be removed completely; for no one pretends that caustic potass can be used—if indeed it can be used at all—in such a way as to remove the whole of an extensive and cartilaginous stricture, consequent on injury to the perineum.

Finally, it has been stated, as a reason for rejecting the perineal section altogether, that it is a dangerous operation, often attended with hemorrhage, and sometimes followed by death.

This is a point which merits serious consideration; for it must be confessed that external division of a stricture, even when performed with facility on

subjects apparently free from internal disease, has sometimes given rise to a fatal result.

Mr. Bransby Cooper has lost a patient; Mr. Fergusson has had the misfortune to lose two or three; Mr. Gay lost one patient; Mr. Cock, of Guy's Hospital, had one fatal case, from purulent infection; and the subject of the case on which I now lecture was cut off by the same accident, supervening on the operation.

I have not had sufficient time to read all the medical journals, and extract from them all the cases of perineal section which have been published within the last three years; but I have been able to collect forty. Of these, sixteen were cases of impermeable stricture, in which the boutonnière was performed; and in twenty-four, Mr. Syme's operation, properly so-called, was practised. Of the sixteen cases, eleven were cured and five died; of the twenty-four cases, twenty were cured and four died. At first sight, this gives us a mortality of ten in forty cases; but we must abstract those cases of death which cannot fairly be attributed to the operation per se.

With this correction, I find that, in the first class, two patients may be said to have died from the operation; and in the second class three likewise. The causes of death were hemorrhage, constitutional disturbances, sinking of the powers of life, erysipelas, and purulent infection. The only causes, however, which can be attributed to the operation, were hemorrhage, which occurred in one case, and constitutional disturbance or sinking, which supervened in three. These statistics are probably very imperfect. I merely bring them forward to show that the perineal section may occasionally prove fatal. Hemorrhage may occur, especially when the bulbous portion of the urethra has been freely divided; the patient may sink from the shock of the operation; or this latter may develope a series of secondary accidents, which carry him off.

As far as our present experience goes, hemorrhage and constitutional disturbance of a severe form are the only two accidents which appear to be inherent to the operation. If the patient's health has been reduced to a very unfavourable state by local disease or its effects—if he be attacked by erysipelas, by purulent infection, or other accidents of a similar kind, after the operation,—it is altogether unfair to attribute any fatal result which may arise to the treatment that has been adopted. Thus, to recur to my own case, and to the one related by Mr. Cock, in both of which phlebitis with purulent affection supervened and caused death, how can the accident be necessarily connected with the operative process, especially if you remember some of the examples I related to you in my last lecture, of purulent infection being induced by the simple use of a bougie? Tetanus, as you know, may likewise occur after trifling operations; it has followed the extraction of a tooth; yet who would think of rejecting the operation because of the accident? In like manner, erysipelas, hospital gangrene, &c., may set in after a trifling operation, and carry off your patient. These are facts familiar to every one; and nothing but the most determined prejudice could induce certain persons to reject an operation because it may possibly be followed by secondary effects, which no surgical foresight can prevent or avoid. Such a mode of reasoning is at once unscientific and disingenuous. If it were admitted, the progress of surgery must be arrested at once. I do not mean to affirm that you are to undertake rashly every operation which may be proposed; but, on the other hand, you are not to reject, without weighty reasons, a mode of treatment which has been followed by the most beneficial results in the hands of our most distinguished surgeons.

In cases of old and obstinate stricture, which have resisted all other methods of treatment, and where the health of the patient is about to give way, you are bound to ask yourselves, Shall we allow the disease to progress until it becomes irremediable, entailing misery on the patient, endangering his life, and probably rendering another operation (puncture of the bladder) ultimately necessary under unfavourable circumstances; or shall we attempt to relieve and cure the patient by a simple operation, which holds out every prospect of success? I would unhesitatingly answer in the affirmative. When extensive practise shall have made you acquainted with the effects of severe stricture, you will be better prepared to understand the impolicy of allowing things to go too far—of delaying

until relief becomes impossible. In the case before us, I have no doubt but that the complication which proved fatal may be mainly attributed to the condition of the urethra, produced either by the original disease, or the treatment employed before the operation. The whole surface of the urethra in front of the stricture was inflamed, and contained numerous abscesses; and from the general history of purulent infection, we know that the presence of an abscess in any part of the genito-urinary system is a determining cause of purulent infection after operations performed on the bladder or urethra.—*Lancet*, *June* 19, 1852, *p.* 578.

[Mr. Coulson having remarked upon the concurrence of Mr. Wade in the operation of perineal section for stricture of the urethra, that gentleman, in a letter to the editor of the 'Lancet,' states his views somewhat more fully, lest he should have been misapprehended. The following are his observations, which, he says, were only partially quoted and commented upon by Mr. Coulson.]

In some strictures, from mechanical injury of the urethra, followed by more or less sloughing of the injured parts, a hard, gristly cicatrix will often be left, while the greater portion of the urine may be passed through fistulous orifices in the perineum. In such a case, dilatation, as well as caustic, will very probably fail in the best hands, and a division of the obstruction, by perineal section, be the only chance of relief for the patient. Where the urethra has been divided by a wound in the perineum, a hard cicatrix may be formed at the seat of injury, and if the contraction cannot be kept sufficiently open by other means to ensure the patient from danger, division by the knife may become advisable, although that proceeding will not always be successful; for so strong a tendency have cicatrices to contract, that although great care be taken, by constant introduction of instruments, to preserve the advantage which has been gained, yet the stricture may return nearly, if not quite, as bad as ever. In a case of hard contractile stricture, not the result of mechanical injury, which has long remained *impermeable* to all milder means of treatment, and where the patient's general powers are suffering *severely*, the operation by perineal section may probably be advisable. I believe, however, that such instances will be of *rare occurrence*.

I have stated the above as cases in which perineal section may possibly be necessary; for although the potassa fusa has succeeded in many such instances, who can calculate upon invariable success with any one method of treatment? I believe, however, with the exception of cases in which a portion of the urethra is obliterated after the sloughing of a part of the canal, or when a hard, contractile cicatrix is left, from complete division or laceration of the tube, that perineal section will rarely be necessary. With regard to Mr. Syme's operation, it is at present my conviction, that where an instrument, however small, can be passed into the bladder, the persevering application of caustic potash will accomplish more enduring good for the patient,—that is, if there be time for its operation, and life be placed in no immediate peril,—than can be effected by perineal section,—and without the slightest risk of a fatal occurrence. My reasons for such an assertion are, that I have lately, by the application of potassa fusa, succeeded in several cases where no hope had been held out to the patients but perineal section, and in two of them both nitrate of silver and potassa fusa had been used, but the latter neither with that confidence nor perseverance requisite for its efficient action in such cases. Further experience has but confirmed my opinion of Mr. Syme's operation, expressed more than two years ago,—viz., that, "its performance can only be justifiable in cases of immediate or imminently impending danger, and that it cannot be depended upon as a permanent cure of bad cases of urethral obstruction."—*Lancet*, *July* 3, 1852, *p.* 19.

93.—REMARKS ON THE LIMIT WHICH MAY BE GIVEN TO DILATATION OF THE URETHRA.

By John Hilton, Esq., F.R.S.

[The remarks of Mr. Hilton upon this subject cannot be better illustrated than by the following cases, which he has related and commented upon.]

A gentleman in my neighbourhood applied to me, a short time ago, with a

stricture situated at the bulb. At first I could only pass a catgut bougie, but subsequently succeeded in introducing Nos. 5, 6, and 7. The latter number was passed through the meatus urinarius with difficulty, and gave the patient pain; it produced a good deal of irritation, and I am confident that a considerable amount of mischief would have been done by going beyond No. 7. Indeed, using that number at all was wrong. Nos. 5 and 6 were this patient's size, and by adhering to them, he recovered perfectly, and is now quite well. He passes now and then No. 5 for himself before going to bed, and leaves it in the urethra about a quarter of an hour. It would have been quite absurd to have gone on increasing the size of the bougies and the number of my fees; such a course would have been a great injustice to the patient, and very discreditable to myself and my profession.

This case reminds me of an analogous one, in which the patient came from a distant part of the world. He brought to London letters of introduction to two surgeons, of whom I was one; and he at first applied to the other. He was, however, not benefited, and as he wanted to return to Ceylon, the surgeon finding the meatus narrow (it would admit Nos. 5 and 6), slit it open, so that Nos. 9 and 10 could be easily introduced. These numbers were persevered in, in spite of the stretching pain, and uneasiness felt by the patient; but as no real beneficial progress had been accomplished by the first surgeon, he made use of his second note, and came to me, tormented by urethral pain and inconvenience, with great depression of spirits.

I found the corpus spongiosum, containing the urethra, as hard as a stick, tender on pressure; a pretty constant discharge of mucus from the urethra, frequent desire to pass urine, always accompanied by pain in the penis, which was rigid and hanging down, not erect, the corpora cavernosa not being involved in the mischief or excitation; the urine emerged very sluggishly, great expulsory efforts being required to insure even its slowly draining from the penis; the canal seemed almost obliterated, notwithstanding the calibre of the instruments which had been forced along its length with assiduity and energetic perseverance. Reflecting on these conditions, and the description which the patient gave me of his state before the employment of large instruments, I concluded that he had had sounds of too large a size passed. The urethral canal being thus considerably hardened, I interdicted the use of instruments, and prescribed mercurial and iodine ointment to be rubbed along the perineum and the whole course of the urethra, to aid or induce interstitial absorption. In about ten days, the induration had materially diminished; and after consulting with Mr. Bransby Cooper, who fully coincided with me in my view of the case, it was agreed that the patient should be placed constitutionally under the influence of mercury, for the purpose of diminishing the size of the corpus spongiosum, and I also began dilating the urethra *de novo*, keeping at last within No 8.

In the course of a few weeks I could make No. 8 go into the urethra beyond the meatus (which you will recollect had been split open to a larger size), but it required more force than was right to be employed, so I advised him never to attempt himself, nor to let any one else be trying to pass instruments beyond No. 6. By pursuing the constitutional treatment which has been mentioned, by blistering the urethral portion of the penis, and carefully using this number or size, the most satisfactory results were obtained, and the gentleman left for Ceylon, delighted at the comfort and improved condition he was experiencing. I advised him to pass No. 6 (for that was his size, and not No. 10 or 13) occasionally, or once a week, and to blister the urethra if he felt much uneasiness or inconvenience in that canal when on his journey.

You see, then, that I apprehend the surgeon who first treated the patient had done too much; he had gone too far, and had, in his anxiety to enlarge the urethra, excited mischief. I repeat it, the best single criterion of the natural size and calibre of the whole canal is the meatus urinarius, provided that be obviously healthy. Take, then, a good measure of that aperture, and you will have a tolerably reliable guide as to what extent you should push the dilatation in treating strictures of the urethra.

The next question now is this—When may a stricture of the urethra be considered cured? This question should, however, be restricted to patients who

are young, or in the middle period of life, and who have no other disease of their urinary organs.

You observe I intentionally exclude the aged or prematurely old in answering this very pertinent but practical question: the reason is, that with such patients there are usually structural changes going on in the urethral walls, prostate gland, and bladder, which may be said to be natural to that period or condition of life, and which produce and cause the persistence of some of the symptoms of a strictured urethra, in spite of any and every effort made by the surgeon to stay or avert them. Confining ourselves, therefore, to the young and middle-aged, we may say that the patient is cured—1. When (assuming there be no local disease, such, for example, as the cicatrix of a chancre, causing contraction at the meatus of the urethra) a catheter or sound which fills the end of the urethra can pass through its whole length without any except muscular interruption.

2. When the water flows freely and *with force* during micturition, without pain or smarting in the urethra. Here you should notice that the *force* with which the urine is expelled is a good criterion of the powers of the bladder and healthy urethra. The actual *size* of the stream is not so trustworthy a sign as the vigour just mentioned, for the urethra (and consequently the stream) may be naturally large. But the force with which the expulsion is performed shows whether there is an impediment in the way or not. Another point of importance is, that the urine should be voided without pain, for where micturition causes uneasiness there is certainly something wrong, about the bladder or canal, and the patient cannot be considered as cured.

3. When the bladder empties itself completely, and the act of micturition is not followed by any dribbling; for if any such dribbling takes place, it will point to a kind of atony in the muscles of the urethra, lately found and described by a very intelligent surgeon, Mr. Hancock, of Charing-cross Hospital.

4. The urine should not emit an ammoniacal odour.

5. There should be no mucus or pus in it.

6. There should not be any habitual discharge from the urethra.

You see, by the six heads which I have just enumerated, that there are many physical circumstances to be taken into consideration for pronouncing a patient cured, besides the free passage of the instrument along the urethra.—*Lancet, Sept.* 11, 1852, *p.* 234.

94.—*On Stricture of the Urethra, with a New Method of Treating the Disease.* By W. J. Moore, Esq., late Resident Surgeon at the Queen's Hospital, Birmingham.—Having, during the last three years, paid considerable attention to diseases of the genito-urinary organs, particularly stricture of the urethra, I am induced to lay before the profession a means of treatment by dilatation, which, so far as I am aware, has never before been practised or proposed. Although so much has of late been said on the subject, it is generally admitted that all the varied plans now advocated are open to serious objections. The treatment by dilatation as ordinarily practised often fails; frequently a catheter of even moderate size may be passed one day, and on the next, owing to spasm, congestion, or subacute inflammatory action, no instrument can be used. Retaining the catheter in the passage is also unsafe; inflammation of the bladder, peritonitis, abscess, &c., not unfrequently arising. The caustic treatment is now almost universally deprecated. Professor Syme's plan is only applicable to certain obstinate cases, where the passage of instruments cannot be borne, or when such treatment has failed. The metallic stricture dilator, lately brought forward, is open to the objection of expanding more in the anterior part of the urethra than the posterior, in which latter portion of the passage it is evident the expansive force is mostly required. Mr. Wakley's instruments are certainly the best yet in general use, and have proved, in my hands, productive of much good; but the interior of the urethra is liable to suffer by the passage of the hollow tubes over the straight staff.

From a consideration of these and other circumstances, I came to the conclusion, that could a thin, expansible substance, be introduced into the urethra,

to serve as a sort of false lining membrane, dilatation might be practised to any extent by expanding (with a larger instrument, sound, or catheter) the expansible material already introduced. Under this impression, I applied to several manufacturers of gutta-percha and India-rubber articles, and finally obtained some tubes from Messrs. Mackintosh, of Liverpool, which partly answered the purposes required. They were, however, too thick and clumsy in every way, so that it was necessary to have a new set prepared on a smaller scale. The material used in their manufacture is, I believe, a mixture of gutta-percha and caoutchouc, with here and there a thread introduced for security and strength. The tubes themselves are rather longer than an ordinary catheter, and the smallest very thin, and of sufficient calibre inside to receive a small wire stilet. The stilet, thus enclosed in the expansible case, is carried through the stricture into the bladder; the wire is then withdrawn, and a larger wire, catheter, or sound, well oiled, passed in its stead within the expansible case already present for its reception. Thus dilatation may be carried to any extent without risk of producing laceration of the urethra, false passage, hemorrhage, or other accident. A command of the passage may also be retained by allowing the flexible tube to remain, which may be done without risk of suppuration or irritation, for days together; the urine being drawn off once or twice daily by means of a catheter, the holes at the end of the instrument of course corresponding with other apertures at the extremity of the dilatable tube.—*Lancet*, *Oct.* 16, 1852, *p.* 351.

95.—CASE OF TRAUMATIC STRICTURE OF THE URETHRA.

Under the care of WILLIAM COULSON, Esq., Surgeon to St. Mary's Hospital.

[In this case there was severe injury to the urethra. In such cases it is customary to keep the urethra as pervious as possible, and remove the urine constantly by means of catheters; but]

Many a surgeon must certainly have thought, before this, that in cases where the canal of the urethra is completely spoilt, where re-establishing its continuity is a matter of impossibility, it might be better to contrive some artificial outlet for the renal secretion, than to make repeated attempts at rectifying the state of the natural canal, when these endeavours are not likely to be crowned with success. In a word, is it not better to establish a permanent or temporary opening over the pubes, or through the rectum, than run the risk of all the dangers which accompany frequent acts of retention? A temporary artificial outlet may, by affording the urethra complete rest, favour a return to the original state of parts; and if the urethra is so much injured as not to be amenable to treatment by dilatation, even after several weeks' rest and freedom from the passage of instruments and urine, the best plan would seem to be to render the temporary outlet permanent.

That the urine may be discharged for a long period from an opening over the pubes, is proved by a case of Mr. Lloyd's, at St. Bartholomew's Hospital. The patient has now used a canula in the pubic portion of the bladder for the last *twenty years*; and that none of the functions are thereby prevented, is proved by the fact, that the last time we saw him at St. Bartholomew's he was under treatment for syphilitic iritis.

That the formation of an artificial urethra is an operation which may be fraught with some danger, we are free to admit; but we merely suggest that in very bad cases it might perhaps be tried. The one which we are going to relate does not exactly come under this head, for the patient died of chorea; but the case will accurately illustrate the host of difficulties which are in these instances besetting the surgeon, and show that in the most skilful hands they are hardly to be overcome by the methods at present in use. We shall soon have an opportunity of recurring to the operation of puncturing the bladder, either above the pubes or through the rectum, as the hospital surgeons of this metropolis are, with regard to this subject, divided into two camps, where completely different opinions are held, as was shown by the late discussion in the Medico-Chirurgical Society. We hasten, in the meanwhile, to give, from the notes of Mr. Bullock, house-surgeon

to the hospital, a sketch of Mr. Coulson's case, which strikingly exemplifies all the phenomena connected with traumatic stricture.

J. D., aged sixteen years, strumous-looking, very nervous and excitable, and accustomed to farming work, was admitted into Albert ward, under the care of Mr. Coulson, Dec. 12, 1851. It appears that, eighteen months before his reception into this hospital, the wheel of a heavy cart passed over the patient's pelvis, taking a course from between the thighs over to the left ilium. He states that the perineum and the scrotum swelled immediately to a considerable extent, and as he had great difficulty in passing his urine, a catheter was introduced, and the same operation repeated several times a day for a week, after which he could empty his bladder without assistance. One month after this period, difficulty of micturition occurred again, and the patient was then admitted into University College Hospital, where instruments were regularly passed for about six weeks.

Being now much improved, the boy left the hospital, and continued well for about two months, when the urine began to dribble from him. He therefore applied again at University College Hospital, when some trouble was experienced in passing an instrument. The patient was now successively in- and out-patient at University College Hospital, getting alternately better and worse, until an abscess formed in the perineum. The pus was then freed, and the urine continued for several weeks to pass through the wound. The latter finally healed up, and the patient left the hospital in tolerable condition. His troubles were, however, not yet over, for, a little time afterwards, Dec. 12, 1851, as above stated, he presented himself at St. Mary's Hospital, with complete retention, no urine having been passed for fifteen hours.

He complained of severe pain in the abdomen, loins, penis, and anal region; his countenance was pale; pulse 120; respirations 38. In the median line of the perineum, a linear cicatrix was observed, resulting, in all probability, from the incision which is mentioned above. The boy, as we stated *in limine*, being very nervous and excitable, begged that chloroform might be used before the catheters were tried; he was therefore narcotized, and No. 7 passed down to the perineum. Further than this the instrument could not be introduced, and when No. 2 was used, it took an abnormal course, running seemingly to the left of the urethra, in the vicinity of the bladder, and a little milky fluid, followed by urine, was discharged. As the impediment, however, could not be overcome, chloroform was soon afterwards administered again, and the urethra opened from the perineum. This operation was far from being easy, as no staff or guide could be passed through the proper canal, all the instruments deviating from the right course, and passing down by the side of the rectum. The amalgamation of the structures resulting from former operations, was also a source of embarrassment; but at last Mr. Coulson succeeded in passing a female catheter into a part containing urine. About three ounces were now evacuated through the instrument, which latter did not, however, seem to have gone into the bladder, as that viscus remained distended. But after the boy had been removed to bed, the urine dribbled freely away from him.

Opiates were regularly administered, and for the next nine days the urine passed through the wound in tolerable quantity; the bladder became gradually less distended, and the boy gained a little strength.

Mr. Coulson now enlarged the wound, and attempted to reach the bladder with a No. 2 gum-elastic catheter; the instrument passed down for a pretty long distance, but no urine flowed through it. In bed, however, urine came through the catheter and the wound, and soon afterwards principally through the former. About eighteen days after this the boy complained of much pain; the catheter was therefore removed, and found thickly coated with phosphates.

The patient now went on for about seven weeks with very trifling alternations in his state, and was allowed to leave the hospital for a little while, to recruit his health, the urine passing pretty freely through the wound in the perineum. He was re-admitted one month afterwards, in about the same state as before; and Mr. Coulson, whilst the patient was insensible with chloroform, introduced a director into the meatus, and passed it along the urethra almost to the opening in the perineum, enlarged the wound so as to expose the point of the director, and introduced another staff into the bladder through the perineal aperture. A No. 3 silver

catheter was now glided down through the meatus across the wound in the perineum, through the canal leading from the latter into the bladder, and a considerable stream of urine flowed through the instrument. This silver catheter was then retained, and a full opiate given.

The urine for several days afterwards came freely through the catheter, when the patient, about a week after the last operation, became very nervous, removed the catheter partly during the night, and began to imitate a boy affected with chorea lying a few beds from him. From this time to the patient's death, a period of about a month, the choreic affection went on increasing in intensity, his skin being fretted and excoriated by the continuity and violence of the movements. Catheters could now and then be passed, but the stream remained very imperfect.

Post-mortem Examination sixty-eight hours after death.—There is extreme emaciation; the face, neck, and upper part of the chest present a spotted appearance, from the discharge being dried up on the parts from which the patient had torn the cuticle during life. The skin over the occipital bone is abraded in several parts; the lips have a fissured appearance; there are small sores on the outer side of the knee, hip, elbow, and metacarpo-phalangeal articulations of the right side; the same is seen on the left, where the sore over the elbow is deeper, extending down to the muscles. The skin over both hips and sacrum is red and abraded, though there is no appearance of sloughing; the wounds of scarification are not healed. After sawing through the calvarium, there was some difficulty in removing the skull-cap, owing to firm adhesions between it and the dura mater, at the occipital and posterior part of the parietal bones. The superficial vessels were congested; the brain itself firm and healthy, as were also the ventricles. Some effusion was observed within the theca of the spinal cord; the latter itself was, however, firm. No pleural adhesions on either side. Lungs healthy. The valves of the heart were sound, except the mitral, at the base of which, along its auricular margin, there were numerous, small, irregular, fibrinous vegetations. The cavities of the organ were filled with firm fibrinous clots, but the structure was in a normal state. Intestines small and empty. Liver firm and pale. The kidneys, being examined under a microscope, gave great evidence of chronic inflammation. A catheter was easily passed into the bladder per urethram, being seen in its course to transverse the perineal wound, which is half an inch in length. The catheter had a great tendency to run to the left of the median line; a probe could also be passed onward from the wound into the bladder; the former, on a close examination, presented a healthy appearance. The bladder was contracted; its coats being nearly an inch in thickness. Between the lower part of the sacrum and rectum, an abscess was observed about the size of a bantam's egg, which communicated with the urethra by means of a false passage, commencing in that canal just as it passes under the arch of the pubes. This false passage ran to the left by the side of the rectum into the abscess, a part of the passage appearing to be formed by the urethra itself. From the abscess a catheter could be introduced into the bladder. Above this and in the median line was another passage, which led into a cavity behind the pubes; this was of considerable extent, and communicated with the above-described passage as well as with the bladder. The cavity was only separated from the peritoneum above by the anterior ligaments of the bladder, and lay between the anterior wall of the bladder and the posterior surface of the pubes. From this there was a third passage, running through the descending ramus of the right pubes, which had apparently been fractured near the junction with the ascending ramus of the ischium. It appeared that union had taken place, with the exception of this passage, which led to a small abscess near the outer margin of the obturator foramen into the adductor brevis muscle. Both the ascending ramus of ischium and the descending of pubes were much thickened, and larger than those of the opposite side, and at the posterior surface there was a projection of new bone into the above-mentioned cavity.—*Lancet, May* 29, 1852, *p.* 519.

96.—MR. BARNARD HOLT'S STRICTURE DILATOR.

[The necessity of thoroughly understanding the nature and treatment of stricture of the urethra, is too obvious to need serious comment, and it is of the utmost

importance that any improvements made in the instruments employed for its relief, should have every opportunity of being presented to the profession at large. It is with this view that the following remarks are introduced, respecting the value of Mr. Holt's stricture dilator.]

This extremely ingenious instrument is, Mr. Holt says, a modification of that contrived by Perrève. It consists of a tube like a catheter, split up to the extremity, where the two halves are welded together. Running through its whole length is a directing-rod; over this directing-rod can be passed a series of tubes of increasing calibre; thus effecting the slightest to the most extensive degree of dilatation. When the small closed tube is passed through the stricture, the sounds can be passed in succession, till the highest point is attained to which the surgeon wishes to go; and, as they are passed over the guiding-rod, and down the interior of the first instrument passed, it follows that all this dilatation may be attained without disturbance to the stricture. Here, then, may be said to be in some measure combined all the advantages which other instruments have ever offered. Steady, uniform dilatation, while the urethra is not irritated by renewed friction; the absence of any necessity for attempting to find again the difficult route; a continuance of the curative application, and thorough safety. The "stricture dilator" may therefore be fairly looked upon as a valuable addition to the means of treatment we possess. The following case will tend to show how satisfactorily it acts:—

J. G., a carpenter, aged 41, living in Lambeth, was admitted Jan. 1851, into Westminster Hospital. He gave the following account of his case. He had laboured under stricture twelve years. He knew of no cause for it, as the last gonorrhœa he ever remembers having suffered from had occurred eight years previously; but those who know how insidiously stricture springs up, and how obscure its origin is, will know how to appreciate these facts. However, having long suffered from it, he went at last to a surgeon, who attempted to introduce an instrument, but could not pass it more than two inches down. Considering it a very bad case, he recommended the patient to go into the hospital.

When admitted, the stream of urine was very narrow, not being thicker than a wire or knitting-needle, and no instrument could be passed into the bladder. An abscess formed in the perineum, which was opened by Mr. Phillips. The patient was then transferred to the care of Mr. B. Holt, who commenced treating him with his stricture-dilator, Feb. 5, 1852.

Nothing larger than No. 1 could be passed at first. This, however, was got through every other day, but, owing to the appearance of some irritability and hemorrhage, nearly a week's intermission in the use of instruments took place. The fourth time this dilatation was tried, the canal was found so much widened, the dilatation could be carried on so far that a No. 6 was admitted. After this period, dilatation was steadily continued till towards the close of the month, when this report was drawn up. At this time, No. 9 could be passed with ease.

The man seemed very much pleased with the results of this treatment. The pain had been considerable at times, at others slighter, the abscess soon healed up, and the patient's health improved; especially as he could retain his urine in the night, instead of being obliged to rise a dozen times to void it. These are satisfactory results in so short a time, and in a case where nearly the whole line of the canal was strictured.—*Med. Times and Gazette, July* 17, 1852, *p.* 68.

97.—CASE OF RETENTION OF URINE.

By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital.

[In this case, stricture of the urethra had been the root of the evil. This had been followed by abscess, fistula in perineo, and retention of urine; for the relief of the last of which the bladder had been punctured through the rectum. Mr. Hilton proceeds:]

"The following day, Nov. 19th, the patient was brought to the hospital; and as complete retention had existed for thirty hours, Mr. Poland and Mr. Puckle, the dresser, endeavoured sedulously to introduce a catheter; they failed, however, in

their object. The instrument, instead of entering the bladder, readily glided into a false passage, nearly three inches in length, along the anterior walls of the rectum, and immediately behind the prostate gland. Soon afterwards, nearly two table-spoonfuls of pus and urine escaped through the meatus."

You at once surmise that the pus here evacuated proceeded from one of the abscesses, which, during the manipulations just described, had been punctured.

"The patient was now ordered a warm bath, and two grains of opium. Two hours afterwards he was seen by Mr. Hilton, who likewise tried to pass an instrument; but, not having succeeded, prescribed two more grains of opium."

What was my object in giving opium so freely? To endeavour to overcome the spasmodic state of the parts surrounding the urethra, and bring about relief to the urgent symptoms without having recourse to an operation. It is, indeed, a great triumph in surgery when we succeed in affording relief, and eventually curing an affection of a serious kind, without the use of the knife. There is always some *éclat* connected with surgical operations, but I would strongly advise you ever to prefer doing good to your patient, to merely trying to attract upon yourself the attention of your professional brethren, and make a public display of your dexterity. By giving the opium largely, I was endeavouring to overcome muscular spasm, which latter is so often the sole cause of the retention. Patients thus treated by opium, generally fall into a profound sleep, the spasm gives way, and they succeed in emptying their bladder by *vias naturales*, in small quantities at a time.

"At half-past seven, p.m., Mr. Hilton saw the patient again, and found him evidently affected by the opium; he had been sleeping, was drowsy, the pupils contracted, and he was now in scarcely any pain. But the bladder, dull on percussion, might be felt extending upwards nearly to the umbilicus; it felt tense and distended with urine."

You hear it stated in the report that the bladder was *dull on percussion;* pray give your attention to this symptom, and bear in mind, on the other hand, that accounts given by patients of no water having been passed must not be fully relied upon as final in determining the case to be one of retention, for the patient's kidneys might have secreted no urine, the case being then one of suppression rather than retention. Dulness of percussion, and the definite form of the swelling, will quickly show you that the bladder is filled with fluid. I must, however, not omit to say for your instruction, that a gaseous tumour has been, and perhaps will be again, mistaken for a full bladder; the case being one of suppression of urine, and the intestines distended with gas occupying the site of the bladder. You should inquire the anatomical reason why the latter viscus does not distend sideways, nor distressingly backwards, when filled with urine. The course and direction of the distended bladder are determined forwards by its adhesions to the anterior parietes of the abdomen, it being there attached by cellular tissue, and the remains of the urachus fixes it to the umbilicus. The lateral distension of the bladder is happily limited; if it were not so, the increased size of the viscus in that direction would cause compression of the iliac veins, and then œdema of the lower extremities; in fact, the round ligaments or remains of the umbilical arteries prevent the distension in the direction just mentioned. When the position and relation of the ureters and bladder are recollected, it is really surprising that, in cases like the present, the latter does not burst, or become forcibly rent from the pelvis; for these organs resemble much an hydraulic press—the bladder is the receptacle, and the ureters the tubes; and as these pass obliquely into the bladder, there is no necessity for the valves attached to the real hydraulic press. The neck of the bladder will become much elongated by distension. You may easily convince yourself of this by passing your finger into the rectum, and feeling at intervals of time the condition of the part while the bladder is filling from the ureters. The ligamentous tissue existing in the vicinity of the pubes, and around the neck of the bladder, is intended to resist over-distension or forced separation, notwithstanding the extreme stretching force to which it must be sometimes subjected; this is very probably the use of that tissue, else it would hardly be so strong and so abundant.

"Mr. Hilton having tried again, but without success, to pass a catheter, determined upon operating by puncturing the bladder through the rectum, by means of a trocar and canula. The patient was brought to the edge of the bed, and placed as for the operation of lithotomy, but with his head and chest much lower than

the pelvis. Very nearly three pints of turbid, ammoniacal urine were drawn off, and the canula (consisting of three tubes, one within the other) was secured in the bladder by means of tapes fastened to a band round the waist. There was no blood lost; the patient was conveyed to his bed, which was previously carefully arranged, and he was allowed wine and porter."

I must here point out to you that the position of the patient for this operation is not exactly that usually assumed for lithotomy; the head and chest ought, in fact, to be lower than the pelvis, and the rectum and bladder should be brought on a line. I will now attempt to describe the operation.

You pass the index-finger of the left hand into the rectum until you feel the prostate gland, and push your finger, if possible, behind that part, which is generally very high up in distended bladders. You then seek for fluctuation, and endeavour to ascertain this symptom, which, however, is not always easy to do. Desire now your assistant to make pressure upon the bladder over the pubes, and to press the viscus down towards the rectum, in which the finger is placed. Having recognised the posterior part of the prostate gland, and maintaining with all possible care the median line, glide the instrument along the palmar surface of the left index-finger until it is in contact with the distended bladder resting on the rectum; take out the director, introduce the trocar, and push it upwards and forwards one or two inches into the bladder, or until you lose the resistance which the coats of the gut and bladder offer to the trocar.

I have never before used the canula which I am showing you; but I think it certainly very useful, for it admits a sort of sound, the smooth and convex end of which protects the rectum from injury during its passage along the gut. Upon the trocar being introduced into the bladder, the urine will flow easily; great care should, however, be taken that the prostate gland be not transfixed, for such a mistake would very likely be fatal to the patient.

I show you here a canula which has been designed by Mr. Cock; it is composed of a hollow tube, provided with three cranks on one end, which are made to expand by the introduction of a canula within it, and which latter is prevented by the cranks from slipping out of the bladder. I consider this a very good instrument. You should, when the patient is in bed, place one pillow under his thighs, one under the pelvis, and the utensil between them, so that the urine may drip guttatim into it without wetting the bed. The details of the case proceed as follows:—

"The day after the operation, Nov. 20, the patient felt much better and quite free from pain; has passed a considerable quantity of urine through the tube. 21st. Has slept well, tongue clean, skin warm and moist; the bowels not having acted since the operation, the patient was ordered one ounce of castor oil. 22nd. Passed very dark motions. Ordered to repeat the castor oil, with twenty minims of tincture of opium; six ounces of wine and one pint of porter daily. 23rd. The oil has acted very powerfully; the patient has a troublesome cough, and was ordered a sedative expectorant mixture. 24th. To-day the two inner tubes were withdrawn for the purpose of cleaning them, and the bladder syringed out with warm water at 98°. As the bowels continued very loose, the porter was omitted, and ammonia, in a tonic and aromatic mixture, was prescribed. 25th, being the sixth day from the operation. For the first time nearly an ounce of urine was evacuated through the penis, and caused very great smarting pain along the whole course of the urethra, which pain was more particularly referred to the end of the penis. 27th. Passes as much urine through the penis as through the tube; he can retain a considerable quantity of urine in his bladder, nearly half a pint being evacuated at will by the meatus."

I will just remark here that this was evidence of great improvement, as the patient was able on the seventh day to pass as much urine through the urethra as through the tube in the rectum. This circumstance points to a favourable change in the walls of the urethra.

"29th. Very profuse diarrhœa has come on during the night, without any assignable cause. Mr. Hilton prescribed chalk mixture, with aromatic confection and syrup of poppies; the two inner tubes were to be removed and cleaned, and the bladder to be syringed with warm water. Dec. 3. The urine passed through the urethra, besides a large quantity of pus, to-day also contains blood; there is

great constitutional as well as local irritation. The presence of the canula in the bladder being considered in some measure the cause of these symptoms, the instrument was removed. Ordered half a grain of morphia at night."

What was the cause of this bleeding from the man's urethra? Probably from some sloughing in the perineum; the blood is very likely to have come from that region, and not from any part about the canula.

"Dec. 6th. Better: the urine is more healthy, and does not contain any blood; cough troublesome. To take a conium mixture three times a day. As the diarrhœa continued, a starch-and-opium enema was ordered.—9th. The patient passes almost the whole of his urine through the proper channel; a very little of it is occasionally evacuated through the rectum; he sleeps well, and is entirely free from pain. The nodular masses in the perineum have disappeared.—12th. The patient again experiences difficulty in micturition, accompanied by great scalding and pain; the urine contains some dark venous blood.—14th. The bladder is very irritable, and the man thinks that a little water passes through the rectum; the perineum is hot and painful; the pulse small and rapid; the tongue brown and dry; there is frequent vomiting and great thirst. Ordered soda water.—17th. Nearly all the urine passes through the two large openings in the perineum.—19th. The patient lies in a half conscious state; his sleep is disturbed with constant moaning; respiration impeded; pulse intermitting and very weak; tongue dry, thickly coated with a brown fur; teeth covered with sordes; and fæces passed involuntarily.—20th. He is fast sinking; pulse imperceptible at the wrist.—21st. The patient was supported by beef-tea, eggs, brandy, and wine, but he expired at two a.m."

Ever since this man had had untoward symptoms, the mischief really lay in the perineum. He had for some time been in a very unhealthy condition; he was aged, and had been living upon poor-house fare. Though some suspicion of peritonitis might have existed, I found on examination that no such inflammation had taken place. The latter is the bugbear of surgeons in cases of this kind, but it should be recollected, that when the bladder is distended there is but little, if any, probability of wounding the peritoneum, by puncturing that viscus through the rectum.

Mr. Cock has now operated upon between twenty and thirty cases of this kind, and is confident, that, with care, there is not much danger of injuring the peritoneum; the more so as it is lifted away from the vesiculæ seminales when the bladder is distended, though these parts are close to each other in the undistended state. I do not mean to maintain that there is no danger whatever of the peritoneum or vesiculæ seminales being wounded, but I repeat that, with care, this objection is no obstacle to the operation.

Post-mortem examination.—The peritoneum did not present the slightest evidence of any inflammation. The abdominal viscera were all in their normal position, but pale, flabby, and badly nourished. The urinary bladder contained a small quantity of turbid, brownish, and highly offensive urine; its muscular parietes were thickened to nearly half an inch; the mucous membrane was inflamed, having upon it patches of recently effused lymph. Prostate gland but little enlarged, and the strictured portion of the urethra, which was about one inch in length, and more free than during life, occupied the bulbous division of the canal, the walls of the urethra being thickened and the mucous surface raised, uneven, and corrugated. Two false passages were found communicating with the urethra—one in front of the urethral obstruction, the other near the prostate gland. Both of these false passages were traceable into the large perineal sinuses, through the medium of a sloughing cavity occupying the perineum, and extending for a short distance between his bladder and rectum. The opening from the latter into the bladder made by the puncture, was situated not more than two inches within the verge of the anus, although at the time of the operation, from the distension and elevation of the bladder, it was nearly if not quite as much as four inches above it. The internal opening was about half an inch behind the prostate gland in the median line, valvular, and admitting a crow's quill. As much space as one inch and a half intervened between the puncture and the recto-vesical fold of peritoneum. The kidneys were mottled in appearance, unhealthy in structure, and of small size; they were contracted, and undergoing the ordinary structural changes associated with albuminous urine.

It will now be useful to inquire what was the cause of death in this case. I firmly believe that this cause was not in any way connected with the operation; for there was not *locally* sufficient mischief to bring on a fatal issue. It is rather in the very dilapidated state of the man's constitution, in the premature decay which was so plain in him, that the cause of death may be sought. The diseased state of the kidneys (organs whose functions are of a depurating kind) has always a marked influence on the result of this operation, and it unfortunately is one of the most frequent and most fatal associations of long-continued stricture of the urethra. This is exactly the state of things in many of the patients who require the operation of puncturing the bladder through the rectum, or some other operation for their relief.

Practical men, who see many of these cases, must certainly be astonished when they hear, or see it stated, that all cases of this kind of old stricture, with perineal sinuses, do well, whatever may be the particular or special treatment. For many days this patient appeared to be doing well, as regarded the urinary affection; but loss of strength and emaciation continued; no constitutional reaction, no general rallying, took place, and the system finally gave way. The appearance of blood in the urine was evidence of ulceration and sloughing, solely depending on *loss of power*. It should, however, be noted that urine might have passed from the opening in the bladder to the false passage in front of the rectum, and thence into the perineum, in this patient.

As the interest of this case mainly rests upon the operation of puncturing the bladder through the rectum, let us now suppose ourselves by the bed-side of this patient when this operation was contemplated. Here was a man suffering from retention of urine for the last thirty hours, with fistulæ and nodular masses in his perineum. The best directed efforts at passing a catheter were fruitless, and nothing but main force to make a canal seemed likely to avail. The patient was given warm baths and opium without success; and as he could not be in a worse condition, he must be relieved by some means or other. The requirements, then, were to afford instant relief, and the question arose what method should be adopted. There are several methods, which I shall now pass in brief review.

First. A passage may be *forced* through the urethra into the bladder. This involves the risk of wounding the peritoneum, and of exciting hemorrhage, which may be fatal to a debilitated patient. No such proceeding could have been justifiable in this case, for the man was weak, ill-fed, and in a state of great irritation. This violence is likewise very painful, and the instrument may, by pressure upon the original canal, preclude the latter from ever recovering itself. The passage made by main force is also very liable to take an ulceration; extravasation of urine may then take place, and the most alarming symptoms ensue. There is likewise a risk of not finding the route again when the catheter is removed; but this untoward circumstance may be avoided by using Mr. Thomas Wakley's instruments, which allow flexible catheters to be withdrawn over a conductor or guiding rod, and be passed again along the same guide.

You may, in the second place, puncture above the pubes. This operation is never performed in this hospital; I am not aware, however, why such is the case, and my experience on this head is not extensive. But from the accounts I hear, I consider that evacuating the bladder by a puncture above the pubes may be very safe and effectual, and it is far from being difficult.

In the third place, the operation may be performed through the perineum; this, however, is accomplished with much difficulty, and would prove an intricate operation for the generality of surgeons. The urethra is in the perineal region so distorted by fistulæ and thickening, the canal is of so irregular a shape, that reaching the bladder by the perineal route is an extremely tedious task. The operation is also extremely painful, and is of necessity mostly of a protracted kind; the patient, who is, in general, already much exhausted, can hardly bear this severe ordeal; hemorrhage is sometimes very considerable; no one can say to what extent the parts may bleed; and it has happened that after a great deal of trouble to the surgeon, anxiety, pain, and risk to the patient, the bladder was not reached at all, and the operation in that respect remained incomplete. This course could by no means have been adopted in the case before us, as the patient was already in a very exhausted state.

Now, in the fourth place, you may puncture the bladder through the rectum. There is really no danger in this operation, in spite of what may have been dogmatically laid down against it; the experience of this hospital is all in its favour, and my colleagues and myself may certainly be excused for adhering to a practice which we have found effectual in relieving the patient, and perfectly harmless. Generally there is little or no hemorrhage, the operation may be performed in a very short time, and is not in the least debilitating to the patient. The bladder is in this manner punctured at the lower fundus, and Mr. Cock's instrument will, after the operation, remain fixed in the pool of urine which is forming in the lower portion of the bladder, the fluid thus constantly draining off by the rectum. In puncturing above the pubes, on the contrary, you are obliged to tilt the patient to favour the evacuation of urine; this is certainly very inconvenient. Recollect that by not allowing any urine to pass through the urethra, this canal remains perfectly at rest, and there is a very good chance of seeing the stricture yield to treatment.

To recapitulate, then, I will just state that the reasons which lead me to prefer puncturing by the rectum rather than in any other way, are positive and negative. First, the negative reason is, that this operation is not open to the objection which may be brought against the other operations. Secondly, the positive reasons which can be adduced are:—

The operation is free from danger if carefully performed; there is very little risk of hemorrhage; the operation is by no means of a protracted kind; it does not tax the patient's strength; is not exhausting, and entails no drain upon the system. As the lower part of the bladder is punctured, the accumulation of mucus, urine, pus, or other secretions, is not allowed, the viscus being completely emptied; you prevent the urine finding its way into the urethra, and give an opportunity to the false passages of healing, and the natural urethra of recovering itself. The seat of the stricture is kept in a state of rest; no local excitation is used, and all irritation, muscular contraction, or spasm is forestalled. There is, on the other hand, no chance of the bladder contracting away from the instrument; it *contracts towards it.*

The principle of the operation as regards the stricture is the same as in opening the trachea to relieve the swellings and obstruction in the larynx. You keep the larynx in a state of rest, the breathing goes on through the trachea below the larynx, and in a few days all swelling has subsided. You may also notice that the same principle of relief holds good in this operation as in obstruction to the large intestine. When an artificial opening is made above the seat of the stricture, so as to allow the escape of fæces, you remove a source of irritation from the stricture, the swelling and infiltration about it diminish, and, in a few days, small quantities of feculent matter may pass through the narrowed portion of the intestinal canal. So in cases of stricture of the œsophagus, if we can keep the walls of the tube in a state of repose, it may sometimes recover in part its natural condition. This may be accomplished by feeding the patient by the rectum.

I recollect, in illustration of this point, a case of stricture of the œsophagus in the posterior mediastinum, which I attended at Islington with Dr. Golding Bird. There was perfect inability to get any instrument or food into the stomach, and, of course, excessive emaciation. By adopting the use of nutritive enemata, regularly and carefully administered, and by avoiding the employment of the œsophagus in swallowing, so keeping it in a state of repose, at the expiration of a fortnight the patient had plumped up amazingly, and regained slightly the power of transmitting fluid food through the œsophagus. This improvement continued slowly to increase, but too slowly for the patient, and, not liking the anal method of taking good food, he consulted another surgeon, who, relying on his manual dexterity with the probang to force or overcome the stricture, made a false passage by its side into the pleura, and desiring that the patient should give, as he hoped, the proof of his successful attempt, requested him to swallow some porter, which found its way into the pleura, and killed the patient, as proved by a post-mortem examination.

For the purpose of showing you how complete a nutrition may be obtained by proper injections per anum, I may mention the case of a gentleman I saw at St. Alban's, who had cut his throat so deeply that it was thought impossible to feed him either by the mouth or wound, and recourse was had to enemata. He was

thus supplied with food, wine, and porter for thirty-four days; during that time his thirst and hunger were speedily relieved and satisfied by the injections—a curious and highly-interesting physiological fact. He recovered from the effects of this unsuccessful attempt at suicide—came to London, and destroyed himself shortly afterwards by blowing out his brains.—*Lancet, Oct.* 16, 1852, *p.* 343.

98.—ON LITHOTOMY AND LITHOTRITY.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson is desirous of considering the indications, comparative advantages, and relative applicability of lithotomy and lithotrity. The two following cases are good illustrations for this purpose.]

Two patients were recently under my care for stone in the bladder. The one was young, the other old. In one I performed the operation of lithotomy; it lasted about a minute, was unattended by the slightest accident, and the patient has recovered.

In the other case, the patient was in his seventieth year; the operation selected was lithotrity; the case to all appearances was not unfavourable; the operation of crushing the stone was effected without any difficulty; but on the day after the second sitting unfavourable symptoms set in, the man began to sink, and died within a week from the first operation.

The contrast between these two cases (and a similar one will often present itself to you in practice) is striking. We cannot avoid asking ourselves whence arose the difference in the results? Why one patient died, while the other recovered? Why lithotomy was selected in the one instance, while lithotrity was employed in the other? And these questions naturally lead to a consideration of two paramount points—viz., the indications which induce the surgeon to employ lithotomy in preference to lithotrity, or *vice versâ;* and the different accidents which may supervene during or after these operations, either retarding the cure, or involving the life of the patient.

[Mr. Coulson then relates the following case:—

James F. was admitted on the 24th of March; symptoms of stone were evident and characteristic. It was soft and easily crushed between the blades of the lithotrite; fragments were found to consist of the triple phosphate, or ammoniaco-magnesian phosphate calculus. On the 25th the urine was found to be alkaline. On the 27th the lithotrite was again introduced, and the stone crushed, but local and constitutional disturbance soon after set in, the latter of a typhoid character, which terminated fatally on the 31st March. The heart, liver, and kidneys, bore considerable evidence of previous disease, and the left knee-joint, which a few days before had become swollen and inflamed, on being cut into, showed extensive ulceration of the articular cartilages.

Mr. Coulson observes:]

In the case of F., the local signs were evident, though, as I remarked, the constitutional disturbance never reached any considerable degree; and this is a point worthy of a moment's attention, when we reflect, not only on the great duration of the disease, but on the nature of the calculus with which the patient was affected. It was the triple phosphate or ammoniaco-magnesian phosphate calculus. This concretion is formed by an admixture of the neutral phosphate of magnesia and ammonia with a bibasic phosphate. It might appear to you at first sight that the chemical nature of the calculus could exercise little influence on the operation performed for its extraction, or that a knowledge of its composition could be of little use beyond the domain of chemistry; but it is always useful to know beforehand the nature of the stone in the case on which we are about to operate: such knowledge furnishes several indications which should not be neglected. Thus we know that the phosphatic calculi are generally friable, so as to be more or less readily crushed, and, what is of much more importance, we know that the deposition of the phosphates from urine usually takes place in debilitated subjects, in persons of broken-down constitutions, and is mostly accompanied by considerable nervous irritation, lumbar pains, and great

general debility. Indeed, it appears highly probable that the deposition of phosphatic calculi requires a certain degree of irritation or inflammation of the mucous membrane of the urinary organs, and their presence therefore indicates a highly disordered state of the urinary organs. They are readily deposited round any foreign body which irritates the bladder, or on such points of its mucous surface as have been most irritated by the calculus, or its fragments when broken up. This fact was illustrated by the post-mortem examination of my patient, and it is highly probable that the unfortunate complication which proved so suddenly fatal in his case, was connected with the irritative state of which the phosphatic secretion now alluded to was a result, and therefore an indication. The practical conclusion, then, that I would have you draw from this point, relative to the nature of the stone, is, that the triple phosphate and fusible calculi are, cæteris paribus, less favourable subjects, if I may use the term, for operation, than the other varieties of calculi; and this remark applies both to lithotomy and lithotrity—the indication, however, rather pointing to an election of the former in cases where an operation cannot be avoided.

The next point for consideration is the relative ages of our two patients. If you ask me why I selected lithotomy for the boy and lithotrity for the man, I will tell you that I was mainly influenced by the difference between their ages. My own experience has convinced me that, in an immense majority of cases, lithotomy is successful when performed on patients under twenty-five to thirty years of age. Success, in fact, is the rule, and failure the very rare exception. This fact alone should lead us to hesitate before we abandon a method, the success of which in the young subject is placed beyond a doubt by the experience of nearly all surgeons in extensive practice. With old people the case is different. Here the proportion between deaths and cures from lithotomy is nearly balanced. Thus in Mr. Smith's cases at the Bristol Hospital, we find that between the ages of sixty and seventy, two patients out of every three died; between seventy and eighty, one in two; and from the extensive researches of Mr. Crosse, of Norwich, we learn that from forty to eighty years the proportion of deaths is one in four. The statistics of the Parisian hospitals give 105 deaths for 297 operations in old people, or one in two and four-fifths.

We shall presently examine the different circumstances under which death takes place from both operations, the symptoms to which they may respectively give rise, and the reasons for selecting one in preference to the other; but I may now remark that there exists a strong reason why lithotomy is, as a general rule, the preferable operation for children under twelve years of age. At an early period of life the genito-urinary organs are not sufficiently developed to permit the ready introduction and manœuvring of the instruments employed for crushing stone in the bladder; but this and other questions of the same kind will be more conveniently examined by-and-by. Let us therefore return to the case of F., simply remarking that his advanced age was an unfavourable circumstance under any method. The history of his case informs us that he laboured under paralysis—I should, perhaps, rather say atony—of the bladder, for a very considerable period previous to the operation. For ten years he had never been able to discharge his urine without the aid of a catheter, which he had learned to introduce himself. After death the muscular coat of the bladder was found much thickened, and its cavity was contracted. This you may at once remark to me is an extraordinary circumstance: the post-mortem appearances are inconsistent with the symptoms observed during life. How could paralysis of the bladder co-exist with the hypertrophy of the muscular coat and contraction of the cavity observed in the present case?

The atony of bladder which accompanies vesical calculus, is a condition that has not been studied with the same care which has been bestowed on many other points; nor are the circumstances attending it yet very clearly made out. When you reflect on the constant irritation produced by stone on an organ, the chief function of which, like that of the heart, is to contract on its contents for the purpose of expelling them, you can readily understand that vesical calculus very often produces hypertrophy of the bladder, with diminution of its cavity. These are the natural consequences of the repeated efforts of the organ to expel the foreign body, or of the repeated contractions excited by a permanent source

of irritation. Indeed, one of the principal difficulties against which the surgeon has to contend, in the performance of lithotomy, or even lithotrity, is this hypertropied, contracted, and irritable state of the organ, which gives it a tendency to contract still further on any additional irritation, and thus often renders it a matter of considerable difficulty, either to seize the stone with the forceps or extract it when laid hold of.

I have now to direct attention to the most interesting part of the case, both in a practical and pathological point of view.

The operation to which my patient was submitted had been performed without any difficulty on the 25th of March, and repeated on the 27th. After the second sitting, constitutional disturbance occurred, and was followed, on the 29th, by pain and swelling of the knee-joint, with typhoid symptoms, under which the man sunk in forty-eight hours. The post-mortem appearances were, deposits of pus on the pericardium and in the knee-joints, a sacculated cyst of the bladder filled with fœtid pus, inflammation of the prostatic veins, and hypertrophy with contraction of the bladder.

The immediate cause of death, then, in the present case, was that unfavourable complication which sometimes accompanies every kind of operation, and is known by the name of *purulent infection*. Upon this I now propose to make some remarks, bringing them to bear, as far as possible, on the connexion of this accident with diseases of, and operations on, the genito-urinary organs.

Purulent infection may, perhaps, be a new name to you, for it is not treated as a distinct affection in many of our standard works on surgery, but you will readily understand the disease to which I allude from the following brief description:

A patient has undergone an operation, say amputation of the leg, and everything appears to go on favourably for a short time, but without any appreciable cause the most serious symptoms manifest themselves; the patient is seized with severe rigors, followed by fever, and often by perspiration, which bear a very close resemblance to those of intermittent fever; the rigors are obstinate and return every day; they are soon followed by a state of prostration, the complexion becomes yellowish and dull, the tongue dry and brown, the pulse quick and feeble; there is often delirium at intervals, and diarrhœa with tympanitis. These general signs are, in a great many cases, accompanied by those of local inflammation in some organ or tissue, very often in the chest, sometimes in the abdomen, but far most frequently in some of the joints or cellular tissue of the extremities; the joints swell, become red and painful, or purulent collections form in the cellular tissue between the muscles. After death,—for these cases are very often fatal,—we find abscesses in the lungs, liver, &c., in the brain, heart, kidneys, uterus; or purulent infiltration of the extremities in which tumefaction was observed during life. The joints sometimes present traces of inflammation, as in F.'s case; but this is rare: more frequently they contain purulent matter, without any trace of ulceration or inflammation. The veins passing from the part which had been primarily injured are very often inflamed, and sometimes contain pus globules, and hence many surgeons consider the disease as essentially connected with phlebitis; but it is certain that the most careful examination has failed to detect inflammation of the veins in several instances. In some cases, I should observe, the symptoms are far from presenting the degree of seriousness just alluded to. There are no rigors; no great fever; no local signs of inflammation in the organs or joints; yet the patient sinks rapidly into a typhoid state, and after death the same purulent deposits are found in the lungs, joints, &c., as are observed in the more severe cases. The most remarkable part of the constitutional symptoms which accompany purulent infection are undoubtedly the rigors, followed by fever, which are extremely constant in their appearance, and have often led the surgeons to mistake the disease for ague. Several cases of this kind are on record: I shall relate one or two presently. It would appear as if each new deposit of pus in the tissues was announced by a rigor; but in many cases the rigors are absent, and the general symptoms confined to those of debility and rapid sinking. The pains in the joints may be mistaken for rheumatism, and when the skin over the articulation is at the same time red and inflamed, the error is more readily committed by those practitioners who

are unaware how often and how unexpectedly the result I now speak of may complicate the most simple and slight operations.

Purulent infection may succeed any operation or injury which has given rise to a secretion of pus in the part locally affected. This is the principal fact which may be deduced from the observations made up to the present time. The severity of the injury, and the quantity of pus secreted by the injured tissue, do not seem to have much influence in determining the secondary affection. It occurs after amputations, fractures, lithotomy, &c., but it may likewise supervene on trifling operations, or after the excision of piles, venesection, the application of a seton or cautery; from a boil or a pustule, or even after vaccination. Legallois relates a case in which purulent infection followed the application of a seton to the neck for the cure of ophthalmia. Some time after, the patient was seized with violent rigors, fell into a state of extreme debility, and died on the fourth day. Purulent collections were found in the liver, but all the other viscera were healthy. No pus could be discovered in the blood, nor were the veins inflamed at any point.

Purulent infection may arise from phlebitis, and this form has been better studied by us than any other. Its connection with puerperal fever and other affections of the generative organs in females, was long since pointed out by Drs. Fergusson, Davis, Lee, and others. In my work on 'Diseases of the Hip-joint,' I have devoted a chapter to puerperal affections of the joints, in which the coincidence of purulent deposit into the articulations with a suppurative condition of the uterus is clearly established by several post-mortem examinations. In one of these cases the blood taken from the inferior vena cava just at its entrance into the auricle, was found to contain, besides the usual blood corpuscles, pus-globules or true pus. These were special bodies, whitish and granular on the surface, with a shell easily rendered pellucid by sulphurous and acetic acids, and these showing three or four central molecules, these latter being unchanged by most acids, and easily dissolved by caustic alkalies. The diameter of the pus-globules was 1-3000 to 1-2400 of an inch.

But admitting the existence of pus in the tissues or veins of the part primarily injured, it still remains a question in what manner the secondary depositions of pus

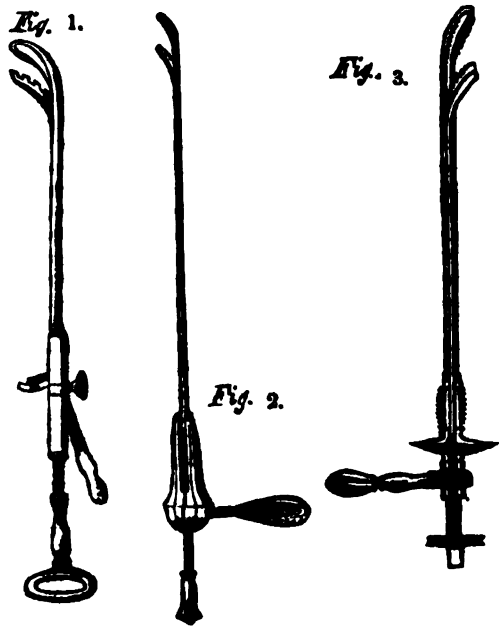


Fig. 1.—Weiss's latest improved lithotrite.
Fig. 2.—Fergusson's rack and pinion.
Fig. 3.—Chassaigne's rack and pinion.

in the lungs, liver, joints, &c., take place. Various explanations have been offered; but I am still inclined to adhere to the one which I published in the work just mentioned, and attribute them to a general contamination of the circulating fluid by the purulent matter absorbed into it. When this contamination has taken place, after the manner of a poison, we can conceive that the secondary deposits occur from metastasis, or that the vitiated blood circulating in the capillaries may, under certain conditions of disordered health, or the impulse of an injury, excite low inflammation, and thus produce secondary abscess or purulent infiltration. However this may be, it is certain that all these forms of purulent infection constitute one and the same affection, and that we take a limited view of the subject when we distinguish them, as has been too much the custom in this country, according to their immediate exciting cause. The affection of the joints which I called puerperal, is identical with the affection of the same parts which occurs after amputation, lithotomy, &c. Even the suppurative inflammation of the eye, which was thought to be peculiar to the puerperal state, is now well known to form part and parcel of purulent infection.—*Lancet, June* 5, 1852, *p.* 534.

[After some remarks on the real merits of the claims to invention of the various *Instruments used in the Operation of Lithotrity*, Mr. Coulson continues:]

Since 1834 many changes have been made in the details of various parts of lithotritic instruments, but none affect the principle on which they work. The blade of the female branch has been made wider and deeper, to receive the detritus; the screw has been replaced by the rack and pinion; the latter furnished with a round handle, as in Charrière's instrument; or with a T-shaped one, as in the English, to give additional force. To Mr. Fergusson we are indebted for the application of the rack-and-pinion system, which he introduced in 1834. It is unnecessary for me to notice all these improvements as they have been called, for almost every surgeon who has occupied himself with lithotrity appears to have though it incumbent on him to make some change in the apparatus—occasionally for the better, often for the worse.

Fig. 5.

Fig. 4.

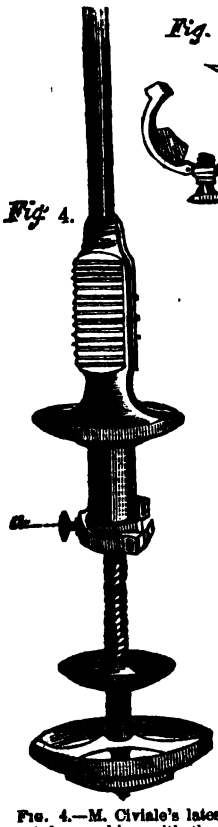


Fig. 4.—M. Civiale's latest instrument for crushing with the hand or the screw, or for employing percussion.

Fig. 5.—The jointed catch, which is shown *in situ* on the instrument, fig. 4 *a*.

The instruments generally used at the present day for performing lithotrity are, the common screw one, the rack-and-pinion instrument described by Mr. Fergusson, and Charrière's last instrument, which likewise acts through a rack and pinion, but differs from the former in the shape of the handle (*see p.* 225).

Having thus comprised, in as brief a space as possible, the principal facts connected with the history of lithotrity, I hasten to its practical application. I shall at another time endeavour to explain to you in what cases lithotrity is to be preferred to lithotomy, for you are not to conclude that all cases of calculus in the bladder admit of being cured by the new operation. For the present, let us suppose that a case of stone suitable for the employment of lithotrity presents itself. How are you to proceed? What are the successive steps of the operation?

Stone in the bladder, as you are fully aware, is almost invariably attended by more or less severe derangement of the genito-urinary organs or of the general health. It is important, before proceeding to the operation, to remove these complications as far as possible; and hence what has been termed the preparatory treatment. I do not now mean to say that you are to select your patients in such a manner as to operate only on those who are free from any complication. This would be impossible

in hospital practice, and, moreover, would condemn many patients to perpetual suffering for the mere sake of enhancing your own reputation, and appearing as a successful operator. What I mean is, that you must, by a preparatory treatment, remove all such local or general disorders as are likely to exercise any dangerous influence on the result of the operation.

Whenever the calculus is small, the bladder healthy, and the urinary passages show little or no signs of irritability, the patient is in the most favourable state, and preparatory treatment need not occupy your attention. But such cases are not very frequent. Patients seldom present themselves to you, especially with the idea of undergoing an operation for stone, until the urinary organs, and subsequently the general health, have more or less suffered. Here the patient must be carefully examined, and all unfavourable symptoms removed, or at least alleviated as far as possible, before you think of operating. The digestive organs often suffer in cases of stone. Endeavour to correct this derangement, and improve the condition of the intestinal secretions. Where the patient is much enfeebled, tonics should be administered; if, on the other hand, the circulation be much excited, general or local bleeding is indicated; but you must be cautious not to reduce your patient too much, nor to waste valuable time by continuing the preparatory system too long. If you relieve the most urgent symptoms, it is all you can expect to do in unfavourable cases. An excessive disposition of the bladder to contract on the stone should be combated by the use of opiates. The condition of the kidneys must be examined with the greatest care, for they are often diseased in long-standing cases of calculus. When the symptoms are uncertain and obscure, an examination of the urine will here be of great assistance.

The state of the urethra, prostate, and bladder, must, I need hardly say, be ascertained, and, above all things, we must endeavour to determine whether disease of these parts has given rise to the secretion of pus. The existence of purulent deposit in the urethra, prostate, bladder, and kidneys, is, according to my experience, one of the most unfavourable complications which can present itself, not only with respect to lithotrity, but any other operation on the genito-urinary organs. The pre-existence of such abscess is a powerful determining cause of purulent infection, and hence I would lay down the rule that every effort should be made to remove such a complication before we think of operating for stone in the bladder, and this remark applies to lithotomy just as well as to lithotrity.

As part of the local preparatory treatment, M. Civiale insists much on the propriety of introducing a soft bougie for a few days, and during a few minutes at each time, so as to accustom the urethra to the contact of a foreign body, and diminish its irritability. He never goes beyond the natural calibre of the urethra, and rejects dilatation of that canal.

Other surgeons, however, employ flexible sounds, the calibre of which is gradually increased until a certain degree of dilatation ensues; but I am of opinion that you had better leave your patient as tranquil as possible until the appointed time for operating arrives. The urethra, like other parts, will bear irritation to a certain extent only, and it can never become habituated to much violence.

The next step may be considered as preparatory also, for it consists in exploring the bladder. A great deal has been said, by the opponents of lithotrity, on the inutility and danger of these preliminary explorations; but they are indispensable, unless, indeed, you are content to go to work completely in the dark. They are somewhat analogous to the usual operation of sounding previous to lithotomy; the proceeding, however, is somewhat different, for more precise information is required; or, perhaps I should rather say, that lithotritists are more careful in ascertaining every particular connected with the state of the bladder, the size of the stone, &c., than lithotomists commonly are. Remember that you have to work for a considerable time with a steel instrument, on perhaps a hard body, in the interior of a small, contractile, and highly sensitive cavity. It is therefore indispensable to obtain some idea of the cavity and contractile power of the bladder before you proceed to break up a stone in this organ. A moderately sized sound, with a small curve (this latter circumstance is essential), is introduced into the bladder, and, being rotated, conveys a knowledge of its capacity, while the manner in which the urine escapes will enable you to form some estimate of the contractibility of the

organ. Should the bladder be extremely irritable, or, on the contrary, in a state of atony, the operation must be adjourned.

Having thus ascertained that the bladder is in a condition to bear further exploration, you now continue your examination. When the bladder is contracted the flow of urine must be prevented, and the point of the sound should be directed at once downwards towards the rectum, where the stone is most likely to be found, and the conditions of which part of the bladder, from its relation to the prostate, are most important to be known.

The most experienced surgeons have, from time to time, failed to detect the presence of a stone in the bladder by the usual method of sounding. In doubtful cases of this kind M. Civiale advises us to inject some fluid into the bladder, and to repeat the injections at short intervals, so as to vary the capacity, keeping it at one time full and the next moment empty; and in this way the bladder is excited to contract, its form and capacity are made to change, and it rarely happens that, as the walls of the bladder close round the end of the instrument and the calculus, the latter is not placed in contact with the former.

Certain diseases of the prostate may cause such a depression of the bladder behind the gland, as to render it impossible to discover the stone by the ordinary method of sounding; and the same result may arise from fungous tumours, &c., at the neck of the bladder. In these difficult cases the curve of the sound must be increased, and if this fail, you must have recourse to the lithotrite, which you are to use as a sound. The small size of the calculus has always been an obstacle to its detection with the common sound. If you meet with a case of this kind you must inject two or three ounces of fluid; next introduce the lithotrite, and open its blades from time to time, when the calculus is usually seized. Having seized it between the blades of the instrument, you next endeavour to ascertain its size; but this can be done only approximatively, for when the calculus is large, or of an oval form, it is quite impossible to measure its size with any degree of accuracy.

These various points will be of great assistance to us in the operation which is subsequently to be performed. If we examine the practice of the most successful lithotritist of the present day—one who has performed more than 600 operations—we can hardly attribute his unexampled success to any other cause than the great attention he bestows on these preparatory arrangements. Many surgeons exceed him in manual dexterity, but none bestow so much care on the medical and accessory points of each case; and hence, I believe, the success of his practice.

On the position of the patient a few words only need be said. The patient is placed on a bed or couch with the pelvis slightly raised, so as to bring the most depending part of the bladder on a line with the internal orifice of the urethra. The legs are to be separated; the thighs slightly flexed; the surgeon stands on the right side of the patient. Having drawn off the urine with a catheter, he next proceeds to inject slowly some tepid water, continuing until the patient experiences a desire to evacuate it; the quantity required generally varies from five to ten ounces. If the fluid be expelled the injection must be repeated, for you should never think of attempting to operate when the bladder is empty. In some cases the bladder, as M. Civiale observes, is thickened and extremely irritable, tending to eject the smallest quantities of the fluid introduced. Here the injection must be conducted with extreme slowness—a small quantity at a time only being thrown in—and the patient allowed to repose between each injection; or the urine may be allowed to accumulate naturally in the bladder. If the irritability continues, you must cease your attempts for the moment, and adopt other means, as leeching, hip-baths, opiate clysters, &c. Chloroform has been tried in some cases of this kind, but without effect, the contractions of the bladder remaining undiminished, though the patient was completely insensible.

The instruments employed for injecting the bladder are a large-sized silver catheter with a stop-cock, and a metallic syringe, capable of holding half a pint and of being accurately fitted to the catheter.

We now arrive at the introduction of the instrument. The early ones, as I remarked before, were all perfectly straight, for curved instruments were not introduced into use until 1831 or 1832. Still you must remember that the curve of the

lithotrite differs considerably from that of the ordinary catheter. The elbow, as you see, is very abrupt, the ascending part is much shorter, and in many instruments the forceps portion is much flattened, to give solidity to the branches. In introducing the instrument the abruptness of the curve must not be forgotten; and the principal point you have to attend to is to keep this curved portion constantly in the direction of the canal, especially while the instrument is passing under the arch of the pubes and through the neck of the bladder. Proceed, therefore, with the utmost gentleness, feeling your way as you go along. When you arrive at the bulbous portion of the urethra, the penis and handle of the instrument should be brought to a right angle with the body of the patient, by which you bring the curve of the instrument under the pubic arch. This done, you slowly depress the handle, advancing it at the same time until the bladder is reached. The amount of depression will depend on the curve of the instrument you use; the shorter the curve, the less you need depress, but the principle to be followed must guide you; that is to say, you must endeavour to make the curve of the lithotrite follow the natural curve of the urethra.

There is seldom any difficulty in passing the instrument, at least in ordinary cases. When the prostatic portion of the urethra is healthy, the lithotrite, such as we now use, passes readily enough, but if there be any tumefaction of this gland, you must depress the handle of the instrument proportionately, so as to throw up the point, and clear the obstacle. I must again caution you against using the slightest force during any of these proceedings. The young operator should never forget that it is very possible to lacerate the lining membrane of the urethra, and that this accident may occur without any great amount of force, especially while the instrument is traversing the membranous portion of the canal.

You now have the instrument in the bladder. The next step is to seize the stone. This is easily done when the calculus is small and the blades of the lithotrite large. The blades are, at first, kept closed, and moved in a sweeping direction, with the convexity downwards, from before backwards, along the bas-fond and posterior surface of the bladder; it is then drawn back a little, and the convexity directed to the right or left side, each of which is explored in its turn; lastly, the point of the instrument is directed upwards and downwards to the space immediately behind the prostate. The instrument should then be carefully rotated, in order to come in contact with the foreign body. This found, the blades of the lithotrite are cautiously opened, and the instrument is pressed on the stone laterally; after which, the blades are closed with the same caution, every effort being made to seize the stone as much towards its centre as is possible. This is an affair of dexterity which practice and great tact alone can attain. It is of importance to remember that the female branch should be kept perfectly immovable while you are closing the instrument, otherwise you run the risk of displacing the stone, which generally lies against its ascending branch.

Having seized the stone, the surgeon must next satisfy himself that nothing besides the stone is included between the branches of the instrument. At an early period of lithotrity, the mucous membrane of the bladder was more than once pinched up, and ground together with the stone; but such an accident, which mainly depended on the imperfect nature of the instruments then employed, is, I believe, unknown at the present day.

Once firmly fixed between the blades of the lithotrite, the calculus is generally broken down without any difficulty. Many surgeons employ pressure with the hand only; and this answers well enough when the stone is not too large or hard. In other cases the use of the screw becomes necessary. Its slow propulsion soon causes the calculus to yield; and if we employ the rack-and-pinion system, a rapid succession of slight jerks may be communicated, which produce many of the effects of percussion. Should the stone, from its hardness, resist pressure, we must have recourse to percussion as an auxiliary, and Charrière's instrument admits of our employing this mode without withdrawing the lithotrite from the bladder. It is, in fact, both a percussor and a crusher at the same time.

Before withdrawing the instrument from the bladder, it is essentially necessary to ascertain that the branches are perfectly closed, and that no detritus has accumulated in the forceps portion. If this be not done, you may encounter an unexpected obstacle when you arrive at the urethra. A few turns of the screw back-

wards and forwards will usually suffice to clear the instrument, or Mr. L'Estrange's stilet may be used, if the male branch be grooved to allow of its passage.

It is only in exceptional cases, and when the stone is both small and very friable, that you expect to break it up at a single operation. The first proceeding should always be short, and when the passage becomes accustomed to the instruments, or less irritable, the operation may be prolonged for ten minutes at a time. This is a rule from which M. Civiale never deviates, and his opinion in this matter deserves the deepest attention. From three to eight days should elapse between each operation, to allow the fragments to pass away with the urine, and any irritation which the operation may have excited to subside. Such fragments of the calculus as are too large to come away with the urine must, of course, be treated as distinct calculi, and crushed separately.

The accidents which sometimes supervene on the operation of lithotrity are, if we believe some surgeons, severe and numerous. Professor Velpeau, in his work on 'Operative Surgery,' enumerates no less than twenty-nine; but this is a great exaggeration.

The first to which I would direct attention, is the lodgment of the calculous fragments in the canal of the urethra. This is by far the most frequent accident to which patients who have undergone lithotrity are liable. A distinguished operator asserts that it occurs about once in four times. The younger the patient, the more likely is he to suffer from this complication, and for two reasons: the neck of the bladder is very dilatable in the young subject, and hence may give passage to fragments which are too large to traverse the other portions of the canal; and again, the bladder in young persons contracts with a considerable degree of energy, whereby the detritus, even when fine, is apt to be driven in large quantities through the neck, and accumulate in the urethra, which it blocks up more or less completely.

The same accident often occurs in the adult; and the symptoms to which it may give rise, if neglected, are of a very severe nature. The foreign body produces inflammation and ulceration of the canal, followed by effusion of urine, &c., irritative fever, and perhaps death. This latter event has occurred more than once in the early period of lithotrity, surgeons experienced in other respects never having thought of ascertaining whether a fragment of stone was arrested in the urethra, and the cause of the patient's sufferings remaining completely unknown until after death.

The fragment may be stopped at any part of the urethra, but the commonest seats are the neck of the bladder, the membranous portion, the middle of the spongy portion, and the fossa navicularis. Contraction existing at any part of the canal, whether spasmodic, or of a more permanent nature, will favour the retention of detritus; and you may expect the accident to occur whenever the urethra is very irritable, the contractile power of the bladder great, and the quantity of detritus resulting from the first operation considerable. These three conditions are evidently the most favourable to the development of the accident which we are now considering, for you have a large mass of matter acted on by a strong propelling force, and an excessive contractility of the canal through which the matter or detritus is to be driven.

The symptoms arising from impaction of a fragment in the urethra are various. A fragment of any size, particularly if it be hard and rough, soon produces more or less sensation of uneasiness in the part, and this quickly passes into pain. The patient suddenly discovers that he is unable to pass his water as freely as before, or he may have complete retention; at all events, micturition is difficult and painful, while the desire to pass water is frequent and urgent. Should the obstacle escape the notice of the surgeon—an error now very unlikely to occur—or should immediate relief be not afforded, general symptoms soon set in; and it is a remarkable fact, that these are very often totally disproportioned, speaking theoretically at least, to the local cause whence they arise. You could never imagine, *a priori*, that a small fragment of stone in the urethra would produce the severe and dangerous constitutional disturbance which it often does. The patient becomes nervous and irritable, he is unable to sleep; irritative fever may ensue, preceded or accompanied by severe rigors, &c.; and if the bladder becomes irritable at the same time, from retention of detritus, the case may terminate fatally. A highly interesting and instructive case of this kind occurred some time ago in the practice

of Mr. Fergusson, at the King's College Hospital. The impaction of fragments in the urethra, in this case, causes excessive local pain, followed by a high state of constitutional irritation. The fragments were removed with the urethra-forceps, or broken up; but the accident recurred: the urethra became inflamed; the inflammation extended to the bladder, urethra, and kidneys; an abscess formed in the groin, and the patient sank, in a deplorable state, after three weeks' suffering. This case, and many others of a similar kind on record, show us that too much attention cannot be bestowed on the accident to which I now allude. It requires prompt and effectual means for its relief.

As soon as you have any reason to suspect its existence, a sound should be passed into the urethra, to ascertain the nature and seat of the fragment; for the remedial means differ somewhat according as the fragment may have become impacted in the interior, the membranous, or the vesical portions of the urethra. A large metallic sound may be used at first; but if you fail to meet the foreign body with this instrument, the symptoms continuing all the while, a large-sized soft bougie is to be passed down the urethra, for it is possible that the fragment may be lodged in one of the lacunæ. If this be the case, the edge of the fragment, as M. Civiale observes, seldom fails to leave a mark on the bougie, whereas a metal sound might pass over it without any sensation being communicated. Having ascertained the seat of the fragment, our next care, of course, is to remove it without delay. For this several means have been proposed, and each may be employed with success according to circumstances. The fragments may either be pushed back into the bladder, extracted whole, broken up in the urethra, or removed by external incision. But prevention is better than cure; and I shall therefore now briefly notice the precautions which M. Civiale's great experience has suggested for the prevention of the accident.

The surgeon can, generally speaking, form a pretty correct idea of the cases in which impaction is most likely to occur, and in such cases he should employ the precautionary measures I am about to mention. Thus, let us suppose that the neck of the bladder and membranous portion of the urethra are very irritable, and at the same time dilatable; that the bladder is capable of contracting with considerable force; that your first operation has given rise to a good deal of detritus. In such cases you may apprehend impaction of the fragments, and should take your measures accordingly. The patient should not be allowed to make water while on his knees, but must endeavour to do so while on his back. Immediately after the operation, several injections of tepid water should be thrown into the bladder by means of a large catheter, with large eyes, and this for the purpose of removing as much detritus as possible. If the bladder be very irritable and contractile, it is necessary, as soon as the first operation has terminated, to introduce a large flexible sound into the bladder, and leave it there. You thus fill the canal of the urethra, and prevent the passage of detritus; but in some unfavourable cases the patient is unable to bear any instrument permanently, and hence, if it causes too much irritation, you are not to persevere.

When operative proceeding becomes necessary, it may be directed, as I have said, to the object of pushing back, extracting, or breaking up the fragment. If the latter be impacted in the neck of the bladder, or behind the triangular ligament, you should, in the first instance, make an attempt to push it back into the bladder. If the fragment be small, and seated near the neck, this can be easily done with the sound or bougie. Should any resistance be experienced, it will be well to try the effect of injecting tepid water with some force, while pressure with the catheter is exercised at the same time. M. Civiale speaks highly of this as an auxiliary means, and you should never neglect having recourse to it. On making pressure with the catheter, great care must be taken that the instrument does not pass forward between the wall of the urethra and the foreign body, or even make a false passage, which might readily occur if too much force were employed with a metallic instrument of small calibre. Indeed, in all operations on calculous patients, you cannot too strongly bear in mind that the mildest means are the best, provided they be efficacious. The genito-urinary organs are seldom in a state of perfect health; they take on irritation or inflammation most readily, and this latter may within a few hours convert a favourable case into one of hopeless danger.

Should you find it impossible to push back the fragment from the membranous portion of the urethra, where impaction very often takes place, you have only the

choice between extraction or crushing. Whenever the former can be effected without much difficulty, it is to be preferred. Sometimes a blunt hook has been employed, sometimes forceps of various kinds, called "urethral forceps." From the dilatable nature of the membranous part of the urethra, fragments seated there may be often broken up without any great difficulty. Some surgeons crush them between the blades of a strong forceps, others employ small lithoclasts with flattish short blades, such as the one of which I now show you a drawing. If you can succeed in seizing the fragment with this instrument, it is easily crushed; but you must take care not to pinch the walls of the urethra between its blades. It must also be borne in mind that the manipulation of instruments in the urethra is a more delicate and painful proceeding than that of crushing a stone in the bladder. The vital tissues are in close contact with the forceps or lithotrite, and every movement produces more or less pain.

Fig. 6.

Fig. 7.

M. Civiale's Urethral Lithoclast.
Fig. 6.—Shows the instrument open.
Fig. 7.—Shows the instrument closed.

The fragment, again, may be impacted, not in the membranous portion of the urethra, but at some point anterior to it, between the glans and bulb. It was formerly the practice to treat all cases of this kind by external incision, and I may here remark, that if every other means fail, you must have recourse to the knife; but in modern practice such a necessity does not often occur, in connection with lithotrity at least. However, if the fragment were large, the patient irritable, and any difficulty in seizing the foreign body presented itself, I should prefer cutting

Fig. 8.

Fig. 9.

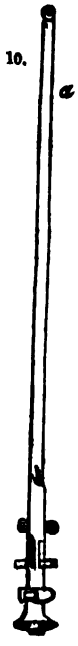


Fig. 10.

Fig. 11.

Fig. 8.—M. Civiale's lithoclast for fragments in the straight part of the urethra.

Fig. 9.—Shows the extremity of the instrument open.

Fig. 10.—M. Leroy d'Etoilles' instrument for the extraction of fragments from the urethra. It is a flat canula, having at the end a small scoop, hollowed out like an earpick, which is capable of being bent to a right angle by means of a hinge and a stilet, which traverses the canula; *a* shows the end of the instrument as it is introduced behind the fragment.

Fig. 11.—*b*. the end now bent to a right angle, so as to embrace the fragment.

into the urethra to the risk of lacerating the corpus spongiosum by any degree of force. The fragments may be extracted or crushed, as in the former case; the straight two-bladed forceps with elastic branches, contained in a sheath, may be employed for extraction; or when the fragment is small, a blunt hook, a probe, &c., may be used; and the operation is generally the more easy, since the penis can be grasped behind the fragment, so as to prevent its displacement, whilst an

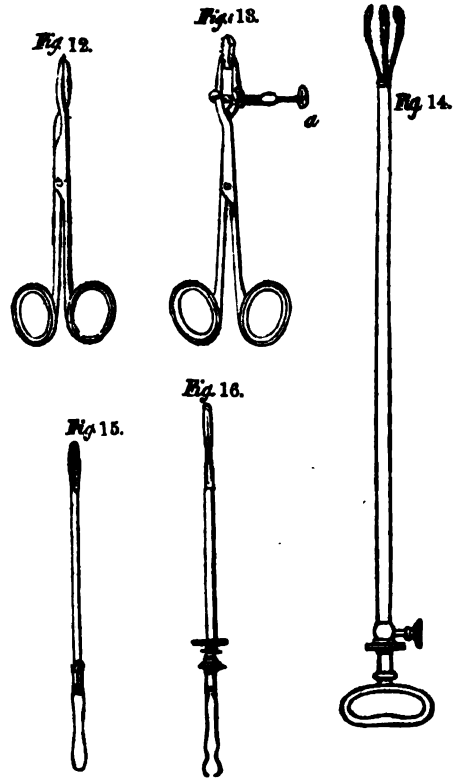
assistant draws the organ forwards. In this way, the blades of any well constructed forceps can generally be passed on either side of the fragment without much difficulty, or it may be crushed *in situ* with an urethral lithoclast, the male blade of which is much shorter than the female one, as you see in the drawing.

Finally, a considerable fragment of the calculus may become impacted in the fossa navicularis, and produce retention of urine and detritus behind it. I show you drawings of instruments which have been contrived for the extraction of fragments from this situation.

From the situation of the obstacle, so close to the external orifice of the urethra, you might imagine that it should be extracted with hardly any difficulty. But this is not always the case. The fragment is too firmly impacted to be removed with the forceps, or even seized between the blades of any instrument; and in such cases it becomes necessary to divide the external meatus slightly, with an instrument similar to that used for the internal division of stricture.

Let us now turn to the other accidents, *real* or *presumed*, of lithotrity.

There is here an important distinction to be made, indicated by the two words I have just employed, for many of the accidents attributed to the operation do not essentially belong to it; and in estimating the value or applicability of any new operation, we must be careful to distinguish those accidents which may be fairly connected with the proceeding, from such as depend on causes that are foreign to it—want of skill in the operator, imperfection of instruments, &c.



Figs. 12, 13.—M. Leroy d'Etoilles' forceps for the extraction of fragments; when the latter are too large to pass readily through the fossa navicularis, they are crushed by the hook and screw, fig. 13, a, attached to the blades.

Fig. 14.—Hunter's urethral forceps modified.

Figs. 15, 16.—Weiss's instruments for the extraction of calculi from the urethra.

Fig. 15 shows an instrument open; fig. 16, an instrument closed.

Keeping this distinction in mind, let us now consider the principal accidents which may complicate an operation of lithotrity, beginning with those which I have denominated *presumed*—that is to say, which are not necessarily connected with the operation, but depend rather on the operator, his instruments, and defective modes of proceeding; and, above all, on perseverance with the operation in cases for which it is manifestly unsuited. In scientifically discussing the merits or demerits of any surgical operation, we have no right to lay all that may occur to the door of the operation. One of our museums contains the trachea of an unfortunate patient, with a large molar tooth sticking in it, which a bungling dentist allowed to drop into the larynx while performing the operation of extraction; yet who would think of saddling the operation with the result of such an untoward event? It is the same for many of the objections made to lithotrity.

Thus, it is said the urethra and neck of the bladder may be lacerated, either during the introduction or withdrawal of the instruments. Such an accident has undoubtedly occurred, and more than once, at an early period of lithotrity; but we may fairly deny that it is necessarily connected with the operation. The size of the curved lithotrite now employed does not exceed that of a large catheter, and, when properly introduced, the manipulation is seldom more difficult than the common operation of passing an instrument to draw off the urine. If a surgeon were to lacerate the urethra or neck of the bladder while passing a catheter to empty this organ, you would not surely attribute the accident to the operation, but to the operator.

In certain cases, indeed, where the prostate is much enlarged, where tumours block up the neck of the bladder, &c., violence may be committed; it may be impossible to avoid inflicting a certain amount of injury on the canal: but here again, I would ask you, should we not rather attribute any accidents which occur to the injudicious attempt at applying lithotrity to a case for which it is not suited? If you attempt to force a small stricture with a metallic sound you may easily lacerate the walls of the urethra; but is this an argument against methodical dilatation, practised according to the rules of our art? Are you to reason from what may occur to what should occur?

As for laceration or injury inflicted during the withdrawal of the instrument, they can occur under two circumstances only. If the urethra and neck of the bladder have admitted the lithotrite, they should also allow of its extraction, unless the instrument has become deformed in the bladder; and this may arise in two ways: the instrument bends or breaks—I shall presently allude to this; or the instrument may be deformed—that is to say, the branches beyond the curve may be more or less separated from each other by the detritus engaged in the dentated and concave portions. Should this separation take place to any degree, and the operator persist in withdrawing the unclosed blades with force, he must inevitably lacerate the neck of the bladder or a narrow portion of the urethra. Here again I may ask, does not the accident depend on neglect of the rules which experience—I might even say common sense—has established? I told you before, that you should never think of withdrawing the lithotrite without examining the scale to see whether there is any separation of the blades, from detritus or any other cause. In such case no attempt at withdrawing the instrument is to be made until the detritus has been removed by the means which I have pointed out to you already. If, as has occurred in many unfortunate cases, the surgeon endeavours to force an instrument through the canal, well knowing at the time, or at all events having it in his power to know, that the instrument is too large to traverse the urethra, is it the fault of lithotrity if he lacerate this canal?

The instruments may break in the bladder, or they may bend and warp, their extraction producing then formidable injury or even fatal results. This objection was much insisted on many years ago, yet at the present day it appears so futile that one is almost ashamed to discuss it. Are the faults of the cutler to be saddled on the surgeon or on surgery? Does imperfection of the instrument necessarily imply imperfection of the art? Our forefathers employed wooden cannon, which of course often burst and destroyed more friends than foes; but this proved nothing against the efficiency of gunpowder as a propeller of balls. To have any value, it should be shown that the amount of force necessary for crushing calculi is of such a degree as to render it probable that the instruments

employed must either yield or break. It were useless for me to discuss the causes which formerly led to the accident I now consider. It was partly the fault of the instrument, partly of the surgeon; it is, I believe, almost unknown at the present day; it never occurred in the hands of the surgeon to whom we are indebted for lithotrity, and who has performed more than six hundred operations without ever having to deplore so unfortunate an accident. To guard against it, as far as possible, the surgeon should never think of operating on the living body without having previously assured himself, by experiment on hard substances, that his instruments are well-made, well-tempered, and capable of supporting the amount of pressure they are intended to exercise; and, should the accident occur, he must be prepared to cut into the bladder, and either extract the fragment or redress the deformed instrument as best he may. You will never, I trust, be reduced to so terrible an extremity.

The mucous membrane of the bladder may be pinched up between the blades of the instrument, or lacerated; and the bladder itself has been perforated. In ordinary cases it is difficult to understand how such accidents can occur with the instruments now employed. The bladder is more liable to be pinched when the calculus is very small, or while the surgeon is endeavouring to seize the fragments of a stone already comminuted. The accident will also be favoured by the practice sometimes employed, of allowing the injection to escape suddenly from the bladder, in order to induce this organ to contract, and bring the calculus within the grasp of the instrument. This is a faulty method, adopted to supply want of dexterity. With the flat, broad crusher, the surgeon will be able to avoid including the walls of the bladder within the blades; but if such an accident did arrive, his own sensation of a soft body and the feelings of the patient would, I think, give him sufficient warning to desist in time.

[*Lithotomy.*—In speaking of the performance of the *lateral operation*, Mr. Coulson lays much stress upon the importance of preliminary treatment to the patient. As much care should be taken as if lithotrity were about to be performed. He says:]

I am accustomed to clear out the bowels on the night previous to the operation, and to administer two clysters, one in the morning, the other about an hour before the operation. The second injection must of course have been expelled before you think of beginning to cut your patient. It will also be necessary, on the day previous to the operation, to examine the state of the prostate gland, and take the measures, if I may use such a term, of the perineum and pelvic outlet in their various diameters.

The instruments now employed for the lateral operation are few and simple; a straight knife for the external, and a probe-pointed bistoury for the internal incision; a grooved staff, and forceps for extraction, are all that are essentially requisite; but it will be prudent to have in readiness needles and tenacula for taking up vessels, canulæ for plugging, and even the actual cautery in case of extreme need, and scoops in case the calculus breaks, or cannot be seized by the forceps.

A great deal has been said about the position of the patient. He should be placed evenly on his back, and supported by pillows, on a table of convenient height, about two feet and a half from the ground. Having clearly ascertained the presence of a calculus in the bladder with a sound or with the staff—I prefer the former myself—the surgeon now proceeds to prepare his patient by having the hands and feet firmly bound together, chloroform having been previously administered.

The operation is made up of several parts or acts which succeed each other in a given order. These are, the introduction of the staff, the external incision, the division of the membranous portion of the urethra, the division of the prostate, and, finally, the extraction of the stone.

Let us describe each of these acts in their order. The use of a grooved staff for conducting the instrument during the internal incision, was an immense improvement in lithotomy. De Romanis, I believe, was the first who employed it, and his instrument does not differ much from the one now commonly employed. The staff should be full-sized, sufficiently long and curved to enable the point to

enter fairly into the bladder. Le Dran, Poteau, and, in our own time, Mr. Aston Key, proposed straight staffs, because the point of the knife slips more easily along the straight groove. The groove in the staff should be as deep as is consistent with the solidity of the instrument; it is made either to one side, or along the convexity of the curve, and should cease about a quarter of an inch from the extremity, in order to prevent the knife from passing on too far into the bladder. The staff is entrusted to an assistant, who is directed to hold it firmly with the handle in the vertical direction, and the plane of the instrument in the middle line. Many surgeons advise us to direct the handle gently to the right side, so as to make the convexity project slightly on the left side of the perineum, which acts as a guide in the first incisions. Deschamps also gives the same advice, because the inclination of the staff removes the urethra away from the rectum. My own experience, however, inclines me to affirm that there is no necessity either of pressing the convexity of the staff down on the middle line of the perineum, or of directing it towards the left ischium.

The direction of the instrument should, on the contrary, correspond as clearly as possible to the natural curve of the urethra; and the staff should be held in such a manner, during the course of the operation, as not to alter a single natural relation of parts.

Having thus fixed the staff, and entrusted it to a proper assistant, the surgeon places the fingers of the left hand on the right buttock, and with the thumb makes the skin of the perineum tense. In doing so he must be careful not to draw the skin up too much, because if this were done, the superior angle of the wound would fall too low after the completion of the operation, and thus give rise to much inconvenience. With a common scalpel the first incision is now made into the integuments. This should commence three or four lines on the left side of the raphé, about one inch above the anus, and be carried obliquely downwards and outwards, a little below the level of the tuber ischii, and a little nearer to that point than to the anus. The length of the incision will depend on the size of the perineum, and, generally speaking, extends in the adult from three to three and a half inches. In children, the first incision should commence according to their age, at five or seven lines above the anus. Deschamps was in the habit of terminating the incision at about an inch from the left border of the anus, and did not often exceed an inch and a half or two inches in length, except when the calculus was supposed to be large. He inclined the incision eight lines from the anus, and four lines from the ischium. Other writers advise that the external incision should terminate midway on a line drawn from the tuber ischii to the anus; but I think it may be slightly lateralized without danger and with advantage,—that is to say, carried a few lines rather towards the ischium than the middle point alluded to.

In making this, the first incision, care must be taken neither to commence too high up, under the arch of the pubes, nor too low down, near the rectum, and not to carry it too obliquely on the ramus of the ischium. There are several objections against commencing your incision too high up; a high incision brings you down on the bulb, which may be wounded, or its artery divided; it also makes the operator commence his internal incisions too far forwards; hence a greater length of the canal than is necessary is divided, and what is worse still, during extraction, the calculus is brought into an unfavourable position—that is to say, towards the apex of the triangle instead of towards the base. If the incision be commenced too low, the rectum runs great risk of being injured; and by carrying the oblique incision too much towards the left side, especially at the lower part, we encounter the risk of dividing the internal pudic artery as it ascends along the ramus of the ischium, an accident of the most troublesome, if not dangerous, nature, for it is very difficult to secure the vessel in this position.

Some operators formerly, rather than now, were in the habit of cutting down on the groove of the staff with a single incision; but, unless the perineum be extremely shallow, I would not advise you to follow this example. On the other hand, you must not grope about or lose valuable time, but with a few rapid touches of the scalpel continue your incision to the staff. In thin persons or children this is very soon found; in others, the finger soon distinguishes the bulb of the urethra, and near to it the convex surface of the staff, as it enters the membranous portion of the urethra. The left index-finger is now passed to the bottom of the wound, the

nail soon falls on the groove, and serves to guide the point of the knife on the staff.

The first incision divides successively the integuments, the fatty cellular tissue about the anus, the transverse muscle of the perineum, the fatty cellular layer between the left erector penis and accelerator urinæ muscles, and some fibres of the levator ani muscles. The superficial artery of the perineum is likewise generally divided. Having distinctly felt with his nail the groove of the staff, and directed the point of his knife along the finger, the surgeon's next care is to open the urethra. Formerly lithotomists were in the habit of making this opening much too far forwards; but since Cheselden's time all are agreed that the bulbous portion should never be touched. The best point to open perhaps, is as close to the anterior part of the prostate as possible. This was Mr. Liston's opinion. Mr. Allan says we should enter into the membranous portion of the urethra about half an inch in front of the prostate. Deschamps made his opening in such a manner as to divide eight or ten lines of the membranous portion of the canal. When the point of the knife has once entered the groove, the surgeon should ascertain by a slight motion of the point, from side to side, that it really is in contact with the staff; and directing the edge upwards and inwards, he makes a small incision through the membranous portion of the urethra. The object of this incision is to make an opening for the instrument which will presently be mentioned. Some operators, following the original example of Cheselden, cut onwards along the groove of the staff into the bladder with the same knife which served to make the first incision. Mr. Liston used commonly to operate in this way, and it is at once elegant, simple, and expeditious, but it is not always easy to keep the point of the knife perfectly in contact with the groove of the curved staff. Hence the practice often adopted in this country and abroad, of completing the internal incision with a button-headed bistoury. It is the safest method, and the one which I generally follow in my own practice.

I cannot exactly tell you who was the inventor of the button-headed bistoury. The first distinct notice I can find of it is in Deschamps; Langenbeck also produced a button-headed knife, which is much used in Germany, and Mr. Blizard proposed another. Le Dran also appears to have used an instrument of the kind.

Having made this opening into the membranous part of the urethra, and taking care to keep his nail well in the groove, the surgeon abandons the scalpel, and substitutes for it the button-headed bistoury. This he directs along his finger to the groove of the staff, and having fixed the knob in the groove, he passes the knife onwards until it reaches the bladder, dividing a small portion of the membranous part of the urethra and the left side of the prostate obliquely, together with some of the anterior fibres of the levator ani muscle.

In making this internal incision, the handle of the knife must be depressed to the lower angle of the wound, while its cutting edge is inclined outwards and downwards, in the line of the external incision, the edge of the knife being kept nearly parallel to the ramus of the ischium. As soon as the knife enters the bladder, a little urine commonly escapes; the knife is now to be withdrawn exactly in the direction of the external wound, after which the incisions may be considered as being completed.

Although the description of this part of the operation has not been long, and though nothing appears more simple than to divide the prostate with a knife running along the groove of a staff which guides it in a sure manner, yet this internal incision is the most essential part of lithotomy, and the success of the operation will mainly depend on its being effected in a proper manner.

A few words on this point may be useful. From the moment lithotomy began to take rank as a scientific operation, and was transferred from the hands of quacks to the great masters of our art, the following question was debated, and still occupies attention:—"Should the internal incision be carried freely through the prostate and neck of the bladder, or are moderate incisions, with subsequent dilatation, to be preferred?"

Allow me to mention my own opinion first; I shall then endeavour to lay the opinions of other surgeons fairly before you. I have had some—I may say, without presumption, a large—experience in lithotomy, and the result of my experience is, that the incision through the prostate should be free enough to allow of the

enter fairly into the bladder. Le Dran, Poteau, and, in our own time, Mr. Aston Key, proposed straight staffs, because the point of the knife slips more easily along the straight groove. The groove in the staff should be as deep as is consistent with the solidity of the instrument; it is made either to one side, or along the convexity of the curve, and should cease about a quarter of an inch from the extremity, in order to prevent the knife from passing on too far into the bladder. The staff is entrusted to an assistant, who is directed to hold it firmly with the handle in the vertical direction, and the plane of the instrument in the middle line. Many surgeons advise us to direct the handle gently to the right side, so as to make the convexity project slightly on the left side of the perineum, which acts as a guide in the first incisions. Deschamps also gives the same advice, because the inclination of the staff removes the urethra away from the rectum. My own experience, however, inclines me to affirm that there is no necessity either of pressing the convexity of the staff down on the middle line of the perineum, or of directing it towards the left ischium.

The direction of the instrument should, on the contrary, correspond as clearly as possible to the natural curve of the urethra; and the staff should be held in such a manner, during the course of the operation, as not to alter a single natural relation of parts.

Having thus fixed the staff, and entrusted it to a proper assistant, the surgeon places the fingers of the left hand on the right buttock, and with the thumb makes the skin of the perineum tense. In doing so he must be careful not to draw the skin up too much, because if this were done, the superior angle of the wound would fall too low after the completion of the operation, and thus give rise to much inconvenience. With a common scalpel the first incision is now made into the integuments. This should commence three or four lines on the left side of the raphé, about one inch above the anus, and be carried obliquely downwards and outwards, a little below the level of the tuber ischii, and a little nearer to that point than to the anus. The length of the incision will depend on the size of the perineum, and, generally speaking, extends in the adult from three to three and a half inches. In children, the first incision should commence according to their age, at five or seven lines above the anus. Deschamps was in the habit of terminating the incision at about an inch from the left border of the anus, and did not often exceed an inch and a half or two inches in length, except when the calculus was supposed to be large. He inclined the incision eight lines from the anus, and four lines from the ischium. Other writers advise that the external incision should terminate midway on a line drawn from the tuber ischii to the anus; but I think it may be slightly lateralized without danger and with advantage,—that is to say, carried a few lines rather towards the ischium than the middle point alluded to.

In making this, the first incision, care must be taken neither to commence too high up, under the arch of the pubes, nor too low down, near the rectum, and not to carry it too obliquely on the ramus of the ischium. There are several objections against commencing your incision too high up; a high incision brings you down on the bulb, which may be wounded, or its artery divided; it also makes the operator commence his internal incisions too far forwards; hence a greater length of the canal than is necessary is divided, and what is worse still, during extraction, the calculus is brought into an unfavourable position—that is to say, towards the apex of the triangle instead of towards the base. If the incision be commenced too low, the rectum runs great risk of being injured; and by carrying the oblique incision too much towards the left side, especially at the lower part, we encounter the risk of dividing the internal pudic artery as it ascends along the ramus of the ischium, an accident of the most troublesome, if not dangerous, nature, for it is very difficult to secure the vessel in this position.

Some operators formerly, rather than now, were in the habit of cutting down on the groove of the staff with a single incision; but, unless the perineum be extremely shallow, I would not advise you to follow this example. On the other hand, you must not grope about or lose valuable time, but with a few rapid touches of the scalpel continue your incision to the staff. In thin persons or children this is very soon found; in others, the finger soon distinguishes the bulb of the urethra, and near to it the convex surface of the staff, as it enters the membranous portion of the urethra. The left index-finger is now passed to the bottom of the wound, the

nail soon falls on the groove, and serves to guide the point of the knife on the staff.

The first incision divides successively the integuments, the fatty cellular tissue about the anus, the transverse muscle of the perineum, the fatty cellular layer between the left erector penis and accelerator urinæ muscles, and some fibres of the levator ani muscles. The superficial artery of the perineum is likewise generally divided. Having distinctly felt with his nail the groove of the staff, and directed the point of his knife along the finger, the surgeon's next care is to open the urethra. Formerly lithotomists were in the habit of making this opening much too far forwards; but since Cheselden's time all are agreed that the bulbous portion should never be touched. The best point to open perhaps, is as close to the anterior part of the prostate as possible. This was Mr. Liston's opinion. Mr. Allan says we should enter into the membranous portion of the urethra about half an inch in front of the prostate. Deschamps made his opening in such a manner as to divide eight or ten lines of the membranous portion of the canal. When the point of the knife has once entered the groove, the surgeon should ascertain by a slight motion of the point, from side to side, that it really is in contact with the staff; and directing the edge upwards and inwards, he makes a small incision through the membranous portion of the urethra. The object of this incision is to make an opening for the instrument which will presently be mentioned. Some operators, following the original example of Cheselden, cut onwards along the groove of the staff into the bladder with the same knife which served to make the first incision. Mr. Liston used commonly to operate in this way, and it is at once elegant, simple, and expeditious, but it is not always easy to keep the point of the knife perfectly in contact with the groove of the curved staff. Hence the practice often adopted in this country and abroad, of completing the internal incision with a button-headed bistoury. It is the safest method, and the one which I generally follow in my own practice.

I cannot exactly tell you who was the inventor of the button-headed bistoury. The first distinct notice I can find of it is in Deschamps; Langenbeck also produced a button-headed knife, which is much used in Germany, and Mr. Blizard proposed another. Le Dran also appears to have used an instrument of the kind.

Having made this opening into the membranous part of the urethra, and taking care to keep his nail well in the groove, the surgeon abandons the scalpel, and substitutes for it the button-headed bistoury. This he directs along his finger to the groove of the staff, and having fixed the knob in the groove, he passes the knife onwards until it reaches the bladder, dividing a small portion of the membranous part of the urethra and the left side of the prostate obliquely, together with some of the anterior fibres of the levator ani muscle.

In making this internal incision, the handle of the knife must be depressed to the lower angle of the wound, while its cutting edge is inclined outwards and downwards, in the line of the external incision, the edge of the knife being kept nearly parallel to the ramus of the ischium. As soon as the knife enters the bladder, a little urine commonly escapes; the knife is now to be withdrawn exactly in the direction of the external wound, after which the incisions may be considered as being completed.

Although the description of this part of the operation has not been long, and though nothing appears more simple than to divide the prostate with a knife running along the groove of a staff which guides it in a sure manner, yet this internal incision is the most essential part of lithotomy, and the success of the operation will mainly depend on its being effected in a proper manner.

A few words on this point may be useful. From the moment lithotomy began to take rank as a scientific operation, and was transferred from the hands of quacks to the great masters of our art, the following question was debated, and still occupies attention:—"Should the internal incision be carried freely through the prostate and neck of the bladder, or are moderate incisions, with subsequent dilatation, to be preferred?"

Allow me to mention my own opinion first: I shall then endeavour to lay the opinions of other surgeons fairly before you. I have had some—I may say, without presumption, a large—experience in lithotomy, and the result of my experience is, that the incision through the prostate should be free enough to allow of the

extraction of the stone without much violence, yet not too free, for fear of hemorrhage or infiltration of urine into the extra-aponeurotic cellular tissue. I am therefore an advocate for moderate incisions, followed by gentle dilatation during the extraction of the calculus. What I now say applies to cases in which the stone is not very large; when the latter exceeds a certain size, other modes of extraction become necessary. But it is not enough to say that the internal incision should be moderate or should be free; we must endeavour to define what these words mean, otherwise the operator is left in the dark, and may be making a dangerous incision while he fancies that he is proceeding in a moderate manner.

A moderate incision, according to my meaning, is one which does not pass through the whole depth of the prostate, but leaves a few lines of that body, near its base, and the capsule, undivided. A free incision is one which divides the whole of the prostate: and an extremely free incision would be one involving also a portion of the neck of the bladder. Mr. Samuel Cooper, in his dictionary, affirms that most lithotomists prefer a free internal incision—one which passes through the whole of the prostate and part of the neck of the bladder, without touching the body of that organ. This may have been true at the time when Mr. Cooper wrote, but it certainly does not represent the opinion of the best operators of the present day.

Frère Jacques, it would seem, divided the whole of the prostate and a small part of the body of the bladder. It is not easy to say to what extent Cheselden carried his internal incision, but I am inclined to think that it was rather a freer one than what I have defined as moderate. Frère Come, Le Dran, Le Cat, Klien, Souberbeille, &c., also employed free incisions.

The inventor of the lateral method, the great Franco, was the first who understood the advantages of a moderate internal incision. "The smaller the incision (says Franco) the better, provided the stone can pass through it, but, on the other hand, it must not be too small, so as to give rise to much violence in the extraction of the stone. *Bref, il est requis de tenir médiocrité.*" One would imagine that another great surgeon of modern times, Sir Astley Cooper, had this passage in his mind when he said, "the longer I practise, the more I am convinced that the smaller the internal wound made in lithotomy the better."

Scarpa has been the principal advocate of moderate internal incisions; and he has been followed in this advice by Sir Astley Cooper, as I have said, by Dupuytren, Callisen, the late Mr. Crosse of Norwich, Mr. Liston, and by most lithotomists of the present day.

In the standard work of Dr. Gross on the 'Urinary Organs,' I find it stated that the practice of American surgeons is in strict conformity with the same principle. "The wound," says Professor Gross, "should in no instance extend entirely through the lateral lobe of the prostate gland, on account of the danger of urinary infiltration."

The late Mr. Martineau, who was one of the most successful lithotomists that ever operated, is supposed by some to have advocated free incisions, while others claim him as a partisan of dilatation. The fact, however, is, that Mr. Martineau followed a method peculiar to himself. His first incision was made nearly in the line of the raphé, while his second incision was a double one; he first carried his knife forwards into the bladder in the usual way, and on withdrawing the knife, he made another incision nearly horizontal, towards the ischium. Mr. Martineau does not appear to have divided the capsule of the gland, and it is certain that he employed dilatation with his finger.

Long before the celebrated memoir of Scarpa appeared, Deschamps had examined this disputed question of free and moderate incisions, and resolved it in the manner conformable to the practice of the best operators at the present day. Deschamps insists on the prudence of our never passing beyond the limits of the prostate.

When the stone is more than twenty lines in diameter, the whole thickness of the prostate must be cut, or other methods employed; but for all calculi below twenty lines, Deschamps shows that an incision of eight lines, or three quarters of an inch, is quite sufficient. This is exactly the opinion of the late Mr. Liston, who was a very successful operator for stone. "The internal incision (says Mr. Liston in his 'Practical Surgery,') should certainly not extend beyond seven lines from

the urethra outwards and downwards; the less that is cut the greater will be the patient's safety." With proper dilatations, according to Mr. Liston, a stone of from three to nearly five inches in circumference in one direction, and from four to six in the largest, may be thus removed. When the stone is larger, other means must be had recourse to; but these I shall examine under the head of obstacles.

The external and internal incisions are now supposed to be completed, and I shall say nothing more respecting them, except that they should be made as exactly as possible in the same plane—that is to say, the internal incision should look obliquely downwards and outwards in the same direction as the external wound.

As a sufficient opening has now been made into the bladder, our next business is to introduce the forceps and extract the stone. This is sometimes a difficult, but always a very delicate part of the operation, for the dilatation of which I have spoken is usually made during the process of extraction.

As the depth of the perineum varies in different patients, and the calculus may occupy different sites in the bladder, being sometimes hooked above the pubes, it is necessary that the surgeon should be provided with forceps of various lengths and shapes. Here is the one commonly used. It was formerly the custom to pass up a blunt gorget into the bladder, and direct the forceps along its concavity; but we now find the left index-finger sufficient to guide them, and we thus get rid of an instrument. You pass, then, your left index-finger into the bladder, and along it you direct the forceps. If the internal incision be not quite free enough, it may be dilated with the finger, according to Mr. Martineau's practice; at all events the forceps will effect a certain degree of dilatation in passing through the prostate and neck of the bladder, but great care must be taken not to employ any violence during this step. If you proceed a little more slowly, the chances of ultimate success increase in proportion; and after all, the saving our patient's life is the main object we should look to. In many cases, the index-finger can touch the stone, and will, therefore, guide the forceps at once on it. In others you must use the forceps as a sound, directing it in the first instance to that part of the bladder where the stone most probably lies—that is, to the bas-fond beyond the prostate.

Having firmly seized the calculus between the blades of the forceps, you proceed to its extraction. Here the important question of dilatation again presents itself. The internal incision is not large enough *per se* to admit of the passage of a moderate-sized stone. The wound in the prostate gland and the neck of the bladder must therefore be dilated to a certain degree, and this dilatation moreover must be effected with a certain rapidity, for you cannot, or rather ought not, to keep your patient too long on the table. The tact and experience of the operator must here direct him; still any violent tearing of the parts must be scrupulously avoided, for the results would be inevitably fatal. It is here that the advantage of lithotrity is chiefly seen. The lithotomist has never more than vague notions of the size of the stone which he is to extract; yet the extent of his internal incision and the degree of force he is to employ during extraction—that is to say, the two most important points of his operation—must be guided by an element which is imperfectly known to him. It has occurred to me often that the operation would gain much if the surgeon were previously to measure the volume of the calculus with some convenient instrument; and I perceive by a report in the *Lancet*, that Mr. Bransby Cooper once had recourse to this plan in a doubtful case. Whenever the calculus is of a flat shape, the operator must endeavour to seize it by its smallest diameter; and if it seems to stick in the neck of the bladder, he must let it go, and endeavour to re-seize it in a more favourable manner. This done, he withdraws the forceps slowly in the direction of the external wound, dilating the parts gradually, and bringing the instrument towards the lower angle of the external wound in a sweeping direction. The various obstacles which may be encountered during the extraction of the stone will be explained at another time.

When the calculus is small, it often escapes from the blades of the forceps. In such cases I have recourse to the scoop; but this is seldom necessary, unless the stone should happen to break into fragments; and hence, whenever the calculus is of the phosphatic kind, you must be careful not to grasp it too firmly with the forceps, for fear of crushing it, and performing perineal lithotrity against your intention.

When the stone has been extracted, the bladder must be carefully examined for any other urinary concretion; for this purpose, a peculiar kind of sound, called a searcher, may be employed with advantage.

I have thus described to you the lateral operation as it is performed in this country at the present day. The modern French operation is somewhat different. It is a modification of that invented by Frère Come, and is performed with a peculiar instrument called the lithotome caché. The patient is placed in the same position as with us, but the hands are not bound to the feet. The mode of performing the external incisions, and of opening the urethra, is also the same; but the urethra is opened just behind the bulb; the lithotome caché is now introduced and its point fixed in the groove of the staff; it is then passed along the groove into the bladder with the blades closed. When the surgeon conceives that he has passed it sufficiently in, he opens the blades to an extent proportioned to the incision he intends making, and in withdrawing the instrument, he divides the neck of the bladder and prostate in an oblique direction downwards and outwards.

Baron Boyer preferred this instrument to all others, but he employed it in a somewhat different manner. His incision was generally a moderate one, and he preferred dilating it with his finger, or even enlarging it with a second incision, to the risk of cutting too freely. He directed the blade nearly horizontally, and cut towards the ischium until the absence of resistance told him that the prostate was divided across. He then introduced his finger, and dilated the incision downwards, so as to give it somewhat the direction of the external wound.

I should observe that many modern French surgeons employ the blunt-pointed bistoury exactly in the same way we do, but they seem to make their internal incision more freely than we.

[For the extraction of stone, next of the difficulties likely to be met with in performing the operation, consists of four parts, viz.—the introduction of a grooved staff; the external incisions; the internal one; and the extraction of the calculus.]

The introduction of a grooved staff into the bladder, through the urethra, being one of the conditions or parts of the lateral operation, anything which impedes this step is an obstacle; but I shall not dwell on this circumstance, as it has been already noticed in my lectures on lithotrity. I shall only remark, that in cases where the calculus is impacted in the neck of the bladder, and cannot be pushed back into the cavity of that organ, it is evidently impossible to introduce the staff, and another method must be had recourse to.

When the patient can be placed in the usual position, and the perineum is not deformed by tumours, fistulæ, &c., or any irregularity in the bony structures, the operator experiences no difficulty in making the first incisions in a proper manner. On arriving at the membranous portion of the urethra, the point of the knife is generally guided to the groove of the staff without any difficulty; but care must be taken, while we make the opening into this part, not to wound the rectum, which lies close upon it. Hence many operators advise us to open the membranous portion of the urethra from behind forwards; but this precaution has not been found necessary in the practice of English surgeons.

When the internal incision is effected by the same instrument which was employed for the external incisions, there can of course exist no difficulty in hitting upon the small opening made into the membranous portion of the urethra, since the point of the knife has never quitted the groove of the staff. But in this mode of operating there is always some difficulty in making the point of the knife glide regularly and easily along the groove into the bladder. In the hands even of experienced operators, it has happened that the groove of the staff has been missed, or the knife has slipped out of the groove, making the incision irregularly, and to one side, in a dangerous manner. Moreau, Frère Come, Scarpa, and many other writers on lithotomy, mention examples of this accident. On the other hand, when the beaked knife is substituted for the pointed one, there may be some little difficulty in hitting upon the exact point of the urethra, which you have already opened. This, however, is seldom any obstacle, and may be obviated by keeping the nail of the left forefinger well in contact with the groove of the staff, which the assistant takes care to hold perfectly steady.

From what I have now said, you may perceive that there is little or no difficulty in making your way into the bladder; the great difficulty occurs in getting

the stone out of that organ, and a great variety of obstacles may impede this important part of the operation. Let us examine them in succession. They may arise from certain conditions of the parts, or depend on the nature, position, and size of the calculus.

The foreign body, as I have said in a former lecture, is extracted with a particular kind of forceps, which we pass along the finger through the external and internal incisions, expand in the cavity of the bladder, close over the stone, and then withdraw in the direction of the external wound.

During each of these steps the operator may encounter unexpected obstacles. In the first place, I may observe that the best operators have occasionally found it difficult to seize the stone, although no impediment could be discovered. Mr. Crosse relates a case in which three-quarters of an hour were spent in efforts to seize a stone not larger than a pigeon's egg.

Generally speaking, however, the nature of the obstacle is sufficiently obvious. The first one to which I shall direct your attention is unusual depth of the perineum, occurring in fat persons. Here the distance from the external surface of the perineum to the cavity of the bladder is greatly increased; the operator is deprived of the great advantage arising from his being able to examine the interior of the bladder with his finger, and the young operator may be led astray, imagining that the forceps has gained the vesical cavity when it has hardly reached its entrance. This commonly occurs in old and fat persons; but the same effect, though from a totally different cause, may be observed in the young subject. In children, from the great extensibility of parts, and other circumstances which I cannot now notice, the bladder is very apt to yield before the knife; and when the incisions have been made, the bladder has also a tendency to recede before the finger. This receding of the organ upwards produces the same effect as if the perineum were deep, and may become, though not in so great a degree, an obstacle to the easy extraction of the calculus. On the other hand, the neck of the bladder is often thick and unyielding in old persons, offering great impediment to the introduction of the forceps, and a still greater obstacle to their withdrawal. Spasmodic contraction about the neck of the bladder may give rise to the same results; indeed, Deschamps relates an interesting case, where spasmodic contraction rendered it impossible to pass even a catheter into the bladder through the internal incision, which had been freely made with a lithotome caché.

Enlargement of the prostate presents a greater or less obstacle to the easy performance of lithotomy, as well as lithotrity. A moderate degree of enlargement may not embarrass the operator; but when this gland is considerably increased in size, it is always a cause of difficulty and annoyance. Anything approaching scirrhous induration will of course impede the action of the cutting instrument; and the lithotome caché has been broken in attempts to cut through indurated prostates. But the great obstacle which considerable enlargement of the prostate causes, is to seizing the stone. It places the calculus beyond the reach of the finger, and a sure guide to the position of the foreign body in the bladder is thus lost; while the distance of the vesical cavity from the external surface is greatly increased. Besides this, the enlarged gland raising up with it the neck of the bladder, leaves behind it a depression or artificial cavity, in which the stone becomes lodged, and easily escapes being detected by the sound, or seized with the forceps. The instrument slides over the calculus, and the only way of overcoming the difficulty is to employ a very long curved forceps, while, with the finger introduced into the rectum, we endeavour to raise up the stone from the depression behind the prostate in which it is lodged. But enlargement of the middle lobe, if carried to any excess, renders this latter proceeding generally impossible. The finger cannot reach beyond the enlarged lobe.

Several morbid conditions of the bladder itself may impede the operator in his attempts to seize the stone. These I fully described in my lecture on the 'Pathological Effects of Vesical Calculi,' and they readily explain the difficulties which are experienced. Thus I told you how, in old cases of vesical calculi, the bladder was often hypertrophied, and at the same time contracted firmly, embracing the stone, or leaving but a small interval between the foreign body and the walls of the containing cavity. The bladder also, in cases of this kind, is often extremely

irritable. This condition of the bladder is a source of great embarrassment during the extraction of the stone. When the bladder is closely applied on the surface of a large calculus, it will require all the dexterity and patience of an experienced operator to pass the blades of the forceps between the bladder and calculus, without injuring or severely irritating the former; the operation thus becomes protracted, and its dangers proportionately increased. Mr. Samuel Cooper, and many other systematic writers, advise us, under such circumstances, to suspend our efforts for a short time, and wait until the contractions of the bladder have become less violent. This, perhaps, is more prudent than to go on irritating a diseased bladder with useless efforts; yet it is always a most undesirable thing to suspend such an operation as that of lithotomy.

In some calculous patients the mucous coat of the bladder is relaxed and thrown into folds, behind one of which the calculus, if small, may be concealed, and escape the forceps. Here, recourse may be had to the scoop, or the stone may perhaps be dislodged from its position by slowly expanding the blades of a broad forceps in a horizontal direction.

It more often happens, however, that a small calculus gets entangled between the meshes of a columnar bladder, and quite eludes your efforts to seize it with the forceps. Here, unless you can succeed in dislodging the stone from its position, either with the finger, the scoop, or some analogous instrument, I cannot see what is to be done. If you attempt to extract the foreign body without regard to the position which it occupies, you must inevitably lacerate the coats of the bladder. The position of the calculus in a regular sac or cyst formed by the mucous coat which has been forced outwards between the muscular fibres, is a still greater obstacle, and one, in my judgment, that is all but insurmountable.

Cases of encysted calculi are fortunately very rare; but when they do occur, they present one of the most embarrassing conditions with which the lithotomist can have to deal. Remember that the stone is more or less concealed in a sac, the entrance into which may be much narrower than the fundus. Could it be ascertained with any certainty before an operation has been undertaken, that the stone is actually lodged in one of these sacs, I am decidedly of opinion that lithotomy should not be had recourse to, because it is ten to one that the operation will turn out to have been useless; but when an opening has been made into the bladder, the surgeon is extremely unwilling to remove the patient from the operating table without having made every effort to complete the work which he has begun.

Let us consider, then, the various ways in which operators have endeavoured to overcome the difficulty of encysted calculi. Two main points are to be borne in mind. The stone may be completely encysted, and the entrance into the sac may be narrow, or its orifice may be wide, and a portion of the stone project into the bladder. When the stone is completely encysted, I am decidedly of opinion that no attempt should be made to dislodge it by incision of the neck of the sac. The operation of lithotomy must be left unfinished. However disagreeable this may be to the surgeon, it is better than to hasten the patient's death by attempts which almost invariably prove fatal.

On the other hand, when the calculus is only partially contained in the cyst, and the orifice of the latter does not embrace it tightly, an attempt may be made to complete the operation. Various expedients have been resorted to by different surgeons. In one case Collot succeeded in dislodging the stone by changing the position of his patient; but this must be regarded as a lucky chance on which others cannot count. In another case where the orifice of the cyst was wide, Moreau succeeded in grasping and dislodging the stone with the forceps. The best practice is to endeavour to dislodge the calculus with the finger; but unless the cyst be seated near the neck of the bladder, the finger does not penetrate far enough to be of much use. A long probe or other blunt instrument may be substituted for it, and careful efforts made to enlarge the orifice of the cyst. In one case, Sir B. Brodie succeeded in dilating the neck of the sac with a probe-pointed bistoury; after which he separated the calculus from the cyst with his finger, and was fortunate enough to be able to grasp the stone with a forceps. Other surgeons recommend us to divide the neck of the sac with a bistoury, or with the lithotome caché, but I need hardly say, that so dangerous a proceeding should

never be employed unless the finger can be made to guide the cutting instrument; and if the finger can reach the cyst, I should much prefer dilating its orifice, if practicable, to cutting it.

Desault invented a peculiar kind of knife, something like a pharyngotome, for this operation; but he can cite only a single case of success; and Deschamps also met but one case of sacculated stone in his extensive practice. The stone was only partly engaged in the sac, and was extracted with the forceps, though with considerable difficulty. After many failures, Deschamps contrived to seize the projecting part of the stone, and to disengage it from the cyst by gentle rotation with the forceps.

If you trust what you will find in books relative to encysted calculi, the operative proceeding seems easy and simple. Thus, to quote a standard work, we are told—"When we have reason to believe that the stone is encysted, it is advisable to introduce the finger into the bladder, and to rupture the cyst with the nail; or when this is impracticable on account of its great strength and thickness, to divide it with a probe-pointed bistoury, or a knife fashioned like a gum lancet, and furnished with a long handle."

Such an off-hand way of describing one of the most delicate proceedings in surgery is well calculated to mislead the young practitioner. It is easy enough to say, divide the neck of the sac with a knife, but the difficulty is to do so without danger; and I have little hesitation in affirming that it would be a most hazardous proceeding to divide the tissues of the bladder at any point which is beyond the reach of the finger; and the latter can seldom penetrate more than half an inch beyond the neck of the bladder in the adult. What I now say applies to the lateral operations.

An irregular position of the stone in the bladder may cause some difficulty in seizing it, and thus protract the operation. The natural position, if I may use the term, is in the most depending part of the floor of the bladder, behind the prostate. In some cases, however, the calculus has been found suspended, or hooked as it were above the prostate and behind the symphysis pubis. Pressure on the abdomen, just above the pubes, may perhaps dislodge it; if not, an effort must be made with a forceps strongly curved. In other cases—but these also are extremely rare—the stone appears to be retained in an anomalous position, by some irregular action of the muscular fibres of the bladder, analogous to the hour-glass contraction of the uterus. A case of this kind occurring during the lateral operation, would be the cause of almost insurmountable difficulty. The action of the finger or knife is here out of the question; and even if the nature of the case were understood, the efforts to pass the blades of the forceps between the stone and contracted cavity must be extremely injurious. Perhaps the only thing left under such untoward circumstances is the high operation.

The numbers, form, size, and physical nature of the calculi may very much influence the proceedings necessary for their extraction, and render this part of the operation difficult or protracted.

When due care is exercised, the circumstance that more than one calculus is present in the bladder can seldom have any other unfavourable effect than that of prolonging the operation. A tolerably healthy bladder bears the contact of instruments well, provided no violence be used. The number of calculi which have been sometimes extracted from the bladder, by the lateral operation, is surprising; but we must remember that in such cases the calculi are usually small in proportion to their number. As many as 200 of these small calculi have been removed by M. Roux and Dupuytren. My friend, Professor Eve, of the United States, removed 117 calculi by the lateral operation, about three years ago, and the patient did well. The case of a woman whose bladder contained 214 is recorded in the Philosophical Transactions; and even a still greater number has been discovered in the bladder after death.

It is difficult to form any exact estimate of the proportion of cases in which a number of calculi may exist, but it is certain that in a vast majority, I might say ten times to one, the calculus is single. In twenty-seven cases the late Mr. Liston met with seven in which more than one calculus existed; M. Klein, the celebrated German lithotomist, met with twelve cases (two to six calculi) in seventy-nine operations of lithotomy. We are indebted, however, for the best

table which we possess, to the late Mr. Crosse, of Norwich, who gives a list of 100 fatal cases, in eighty-four of which the calculi were single; in seven, two calculi were found; in six, three; in two, four calculi; and in only one, five. A month ago, I extracted four calculi from a patient. Two of these were round and large, measuring more than an inch and a quarter in the smallest diameter. The other two calculi presented at one part flattened surfaces, as if a portion of the sphere had been cut off. They weighed three ounces and a half. This case did extremely well; and I may here notice, that the sensation communicated by the sound passing over the four calculi, led me to believe that I had to deal with a single large one. A number of small calculi may be extracted with the forceps; but when the foreign bodies are very small and numerous, the scoop seems the better instrument. It has often been said that the roughness of the stone, on its surface, is a sure sign that the bladder contains no other calculi; this, however, is an error which Deschamps pointed out long ago. The first stone extracted may present no sign whatever of the effects of friction, yet the bladder may contain several calculi. Hence the practical rule never to remove your patient until you have convinced yourself, by careful examination, that no other foreign bodies are left behind in the bladder.

When the stone is single, and at the same time small, the operator may experience some difficulty in grasping it with the forceps, on account of the smallness of the body which he seeks to lay hold of, or, when seized, it may easily escape from the forceps. Many operators are in the habit of having recourse to the scoop under such circumstances; for my own part I prefer employing the forceps whenever it is possible: it is not easy to find a very small calculus with the scoop, and repeated scraping of the bladder is apt to excite great irritation, if not inflammation of the organ.

The shape of the stone may occasionally be an obstacle to its easy extraction. The commonest form of vesical calculi is the oval, but sometimes they are more or less flattened; thus, one of the calculi extracted by Vacca, was two inches long, one inch and two-thirds broad, and not half an inch thick. M. Civiale has seen calculi almost as flat as a crown piece, and our own museums contain many specimens of the same kind. Now you can easily understand that there may be some difficulty in laying hold of a flat stone with the forceps; but the great obstacle to its extraction is when it has unfortunately been seized by one of its large diameters. There is a great difference between extracting a body which measures two inches, and a body which measures only half an inch, through the same wound of the prostate. You must, then, always bear in mind the possibility of your having seized an irregular-shaped stone by one of its long diameters; and hence, whenever you find any difficulty in extracting the stone, your very first care must be to let go the calculus without withdrawing the forceps from the bladder, and endeavour to seize the stone in a more favourable manner. This, I say, must be done before you think of enlarging the internal wound, of breaking up the foreign body, or having recourse to another mode of extraction. It may be that the calculus is really a large one, and that it has been seized in the best way; but give your patient the benefit of the doubt, and before you push dilatation as far as it can go, see if nothing is to be gained by a change of position. On the other hand, you are not to let go the stone without sufficient reason, and because of slight resistance to extraction. A great point is always gained when the calculus is once within the grasp of the forceps, and it may not be so easy to catch it the next time you try. Whenever the finger can be made to penetrate sufficiently far into the bladder, it will be of great assistance in determining the shape of the stone, and in placing the latter in a more favourable manner between the blades of the forceps.

Although fracture of the calculus during extraction belongs more properly to accidents, it may be conveniently noticed here, for it likewise presents an obstacle to rapid completion of the operation. It is a curious fact, that the fracture of the stone may be spontaneous, or, at all events, may occur some time anterior to the operation.

Mr. Crosse has published a case placing this fact beyond doubt. In the bladder of a man seventy years of age, Mr. Crosse found twenty-two calculi, weighing three ounces and a half. These calculi, however, were evidently fragments,

and could be put together so as to form three different bodies, one comprising five fragments, a second eight, and the last nine fragments. The primitive calculi were about the size of a pigeon's egg, and composed of uric acid with a small proportion of oxalate of lime. M. Civiale endeavours to explain spontaneous fracture of calculi by the violent contractions of an hypertrophied bladder. It would seem that rough exercise on horseback has also been a determining cause of the fracture; while the admirers of mineral waters will not fail to attribute the disintegration which sometimes occurs during their use to the solvent virtues of the spring. However this may be, we find that calculi may spontaneously break up in the bladder, or be fractured by the forceps; and in either case the operation of extraction is necessarily prolonged; in the latter, indeed, the lithotomist has performed a kind of lithotrity, without intending it.

The surgeon should always endeavour to extract the calculus entire, for two reasons especially. The first is, that a single calculus is more quickly extracted than a number of fragments; and however writers may insist on the necessity of caution, prudence, &c., it is no less certain that to perform lithotomy well, it must be performed in the shortest space of time compatible with the safety of the patient. The use of chloroform may perhaps render it less necessary than formerly for the operator to be a quick one; but even with the aid of this valuable agent, I believe that the old rule holds good—the shorter your patient is under the knife the better. I do not say that you are to sacrifice safety to brilliancy, but that the acme of perfection in the lithotomist is to do his work safely, and at the same time rapidly. The second reason for avoiding fracture of the calculus is, the possibility of relapse from retention of some fragment in the bladder. After lithotrity, you have the natural passages open for the discharge of detritus; but after lithotomy, we cannot keep the external wound open too long without inconvenience and danger.

The chemical nature of the stone will of course mainly influence its tendency to give way under the pressure of the forceps. Hence it is of much importance to ascertain beforehand, as nearly as possible, the composition of the calculus which you are about to extract. Uric-acid concretions are the hardest, and the ringing sound which they emit, when struck, often suffices to indicate their nature. On the other hand, the triple phosphate is easily broken; but the most fragile of all is the fusible calculus, which sometimes crumbles into fragments on the slightest pressure. It is necessary to bear these points in mind, for when you know that the calculus is friable, you will of course be more careful during its extraction. The forceps employed should be broad-bladed, with the teeth not very long, and the stone must be seized as lightly as possible, care being taken not to increase the pressure as the forceps are being withdrawn through the neck of the bladder and prostate, where the greatest resistance is usually experienced.

In spite of our caution, the calculus, however, may give way, and either throw off several fragments or even break up into a mass resembling mortar. This is an unfavourable accident, for it compels us to introduce instruments frequently into the bladder, and the irritation thus produced has excited such violent contraction of the organ as to render it impossible to finish the operation. When it does occur, any large fragments must be extracted with the forceps, and the smaller ones with the scoop; some will inevitably remain behind, and, to remove these, injections with tepid water are to be employed and repeated before the wound in the perineum closes.

I once had a case in which more than an hour was employed in removing with a scoop, the matter of a fusible calculus; still a considerable portion remained, and as I was unwilling to protract the operation any longer, I had the patient removed to bed. At the end of a fortnight I introduced a larger catheter through the urethra, and washed out the bladder thoroughly; this brought away a good deal of the friable matter through the wound in the perineum. The same process was repeated every second day until no more calculous matter came away—that is, for about a fortnight. The patient recovered, and has had no relapse.

When the prostate is much enlarged, this plan may not succeed, as the fluid thrown in by the urethra does not find a ready exit through the incision in the neck of the bladder. In cases of this kind, the best practice is to employ the large-eyed

catheter, and wash out the bladder in the way I have already described when speaking of the removal of detritus after lithotrity.—*Lancet, July* 10, 1852, *p.* 26; *July* 31, *p.* 93; *Oct.* 23, *p.* 368; *and Nov.* 6, *p.* 413.

99.—CASES OF EXTRACTION OF LARGE CALCULUS.—BILATERAL OPERATION WITH THE DOUBLE LITHOTOME OF DUPUYTREN.

By Dr. John Fred. May, Professor of Surgery in the National Medical College, Washington, U. S.

George H., aged 18, entered the Washington Infirmary for stone in the bladder. He has for many years been labouring under all the symptoms of stone, but has never been sounded for it. He is unable to pass his urine except by placing himself horizontally across a chair. On sounding him, a few days after his entrance, a calculus was at once detected, and, from several subsequent examinations, I believed the stone to be so large that I did not deem his case a favourable one for lithotrity. I therefore decided to cut him, and, on the 15th of April, performed the bilateral section before the medical class in the following way:—

The patient having been etherized and placed in the usual position, a deeply-grooved staff was introduced into the bladder, and pressed firmly against the perineum, as near as possible in the median line. A crescentic incision was then made over the staff, which, commencing on the right side at a point equidistant from the anus and the tuberosity of the ischium, was terminated at a similar point on the opposite side, the centre of the curve being three-fourths of an inch above the anus. The incision was, by a few strokes of the scalpel, deepened, the fascia and perineal muscles divided, and the membranous portion of the urethra exposed, which was then opened upon the groove of the staff longitudinally, and to a sufficient degree to admit the beak of the double lithotome of Dupuytren, which being fairly placed in the groove, was introduced upon it into the bladder. The stone being felt with the end of the lithotome, the staff was extracted, and the instrument being reversed, the blades were sprung to No. 18 on the graduated scale, and it was withdrawn from the bladder, thus dividing the prostate equally, on both sides nine lines.

The calculus was then readily seized with the forceps, but, finding that from its size it would not pass through the incision that had been made in the prostate, the forceps were extracted, the lithotome again introduced, and the gland further divided by the blades being sprung to their maximum point of twenty-one lines. The stone was then seized with curved forceps, and extracted entire with not more than the usual force required in the extraction of a calculus of medium size by the lateral observation.

The following were its dimensions: Longest diameter, *two inches within a fraction;* shortest diameter, *one and five-eighths of an inch;* circumference, *five and five-eighths inches.* It was hard, being a triple phosphate, and round. The patient recovered from the operation in about the usual time, and being sufficiently strong to travel, left for his home in Virginia in about two months after the operation was performed.

I have given the details of this operation, because I think it tends to sustain the superiority of the lateral section for the extraction of large calculi; for I am convinced that the stone in this case could not have been extracted by the lateral operation without prolonging the incision further beyond the limits of the prostate and upon the neck of the bladder than would have been safe for the patient. For a stone less in size, I have seen the high operation resorted to in the wards of Civiale.

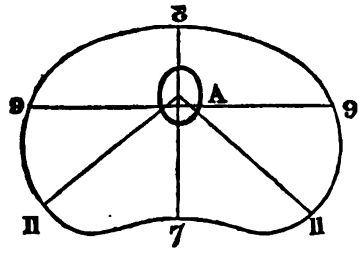
Within the last twelve years, the bilateral section for the stone has attracted a good deal of attention from American surgeons, and I believe some of the most distinguished, after having fairly tested it, are its advocates at the present time. Its great merit, which I have already alluded to, that it permits the extraction of large calculi with greater facility and with less danger than any other method of perineal lithotomy, I think few can doubt, when they consider attentively the anatomy and dimensions of the parts which are concerned in the operation for the stone.

I believe it is generally admitted, at the present day, that one of the great points of safety in perineal lithotomy is the avoidance of injury to the middle perineal fascia, or that layer which is reflected from the prostate gland upon the rectum, and hence that it is most desirable not to incise beyond the limits of the gland. The division of this fascia beyond the gland unquestionably favours urinary extravasation, and, consequently, its frequent attendant of sloughing abscesses between the bladder and rectum. Scarpa, indeed, was so thoroughly convinced of the importance of not injuring the prostatic fascia, that he thought the limits of the gland ought never to be passed with the knife, and that a calculus of more than sixteen lines ought never to be extracted from the perineum entire. It is true that others, disregarding the gland, have advised the free incision of the neck of the bladder when necessary; but, although this free incision may be necessary in the lateral operation, if the calculus is large, I presume that even its advocates will hardly contend that it is equally safe. No one, I think, can do so who properly appreciates the value of fascial expansions in warding off and thus protecting parts which lie beyond them from the well-known effects of extravasated fluids and secretions. Velpeau, in his remarks on lithotomy, in his great work on operative surgery, supervised by Professor Mott, in alluding to this point, observes:—

"Delpech also thinks that there is less danger in dilating, or even lacerating, the neck of the bladder than in incising it extensively, and that in this respect Lecat's rule ought to be retained as a law. There is under this precept an important truth, which could not be perfectly appreciated until in these latter times, because the anatomical fact connected with it had not been clearly indicated. It is this: *That lithotomy, confined within the limits of the prostate, is infinitely less dangerous than in that in which the incisions are extended beyond this gland.*"

If it is, then, true that it is all-important, for the reasons that have been mentioned, not to incise beyond the borders of the prostate gland, the superiority and safety of the bilateral section is apparent.

The following diagram of the several diameters of the prostate, from the urethra as the starting-point, will at once show the difference in the extent of the incisions through the gland made in the lateral and bilateral methods.



The measurement is that of M. Senn, of Geneva, and gives the average size of the gland in a healthy state in the adult. In old men and children there is, of course, a considerable variation from it. The anterior face of the gland is considered.

It will thus be seen that from the urethra A to the periphery of the gland, the dimensions are as follows: Transverse diameter, nine lines; oblique diameter, ten to eleven lines; inferior vertical diameter, seven lines; superior vertical diameter, three lines. The oblique diameter, the greatest, is the one divided in the lateral operation. This is eleven lines, or one line less than an inch. Add to this the dimensions of the urethra, about four lines, and this section will give us but fifteen lines. Now, it is very certain that a calculus of over sixteen lines in its shortest diameter could scarcely be extracted through this opening without either tearing or incising beyond the limits of the gland, for although something must be allowed for the stretching and yielding of the parts, yet this is fully counterbalanced by the increased volume which the blades of the forceps would add in grasping the stone. The surgeon, therefore, is obliged either to tear the parts by main force, or to incise them freely beyond the prostate.

Now, in the bilateral division of the gland in which both the oblique diameters are incised, we have, allowing four lines for the urethra, a section of twenty-six lines; and if to this we allow for the stretching of the curve, approaching as it does towards a straight line during the passage of the calculus, it is evident that it will permit, without great difficulty, the passage of a stone of two inches in its short diameter, leaving, at the same time, intact the parts beyond the gland. None of the methods of perineal lithotomy can, therefore, in its *free* and *safe* incision, be compared with the bilateral operation, permitting, as it does, the passage of a calculus of two inches in diameter and six inches in circumference without causing any laceration.

In speaking of this operation, Velpeau remarks that "a calculus of twenty to twenty-four lines in thickness, and from five to six inches in circumference, might, *strictly* speaking, pass through the opening without causing any laceration." If the stone be larger than this, it had better either be broken, if possible, through the wound, or extracted by the high operation. There are surgeons who prefer performing the bilateral section with a common scalpel, for the purpose of simplifying the operation, and from the belief also that the incision through the gland does not correspond to the expansion given to the blades of the lithotome, from the yielding of the latter on account of their length and slenderness. I do not think the last objection to be correct. If the instrument is made properly, and the blades are well and firmly articulated and sharp, I have not been able to discover any such defect. The operation can, no doubt, be very well performed with the common scalpel or bistoury, and if the lithotome of Dupuytren did not possess positive advantages over it, it ought to be preferred upon the ground of being the more simple instrument. But the lithotome, as Velpeau remarks, renders the parts more tense as it divides them, gives greater regularity to the wound, terminates the operation with a single cut, and especially makes "an actual curved, instead of a simple V incision, which latter is the only one which can reasonably be expected, if we use the bistoury or other lithotomes." It is an instrument, moreover, that can be safely used at all ages, as the blades can be sprung by the graduated scale on the handle from four to ten and a half lines on each side. I first used the double lithotome in 1842, and then on a child of three and a half years. The blades were set to four lines each, thus making an incision of eight lines through the prostate, and through this, with a pair of ordinary polypus forceps, I extracted a calculus one inch in its long, and five-eighths of an inch in its short diameter (about as large as a common-sized almond in the shell) without the wound being even stretched by its passage. The child did not lose over ʒi of blood, and the recovery was very rapid, the wound being nearly closed in two weeks after the operation was performed; a fact which goes far to disprove the assertion made by some, that cicatrization is much slower after the bilateral than the lateral section.

There are, moreover, other reasons, besides those already mentioned, which, it appears to me, render this operation safer in many respects than the lateral method, and which I, therefore, think should cause it to be adopted, not only specially, for the removal of small calculi, but also as a general method.

In the first place, there are fewer vessels divided by it, and the bulb of the urethra is not touched, for the incision is made between the anus and the bulb, and the latter with its transverse artery can be always avoided. In the lateral operation, from the position and extent of the incision, I do not see how the bulb and artery can well escape, notwithstanding the directions in the books. Without attaching to their division great importance, it is yet undoubtedly preferable to avoid them when it can be done. If the double lithotome is used, the pudic artery cannot by any possibility, except anomalous distribution, be reached. Even the superficial artery, when in its usual position, is not usually divided; so that the operator is incomparably less incommoded by hemorrhage, as the posterior branches of the transverse, and the anterior twigs of the hemorrhoidal artery are really the only arteries that are usually divided. Again, as the lithotome cuts *outwards* and backwards, there is less danger to the rectum. Indeed, I do not see how the intestine can be injured, unless it should be greatly distended from neglect, prior to the operation; and, lastly, the ejaculatory ducts and vesiculæ seminales are not exposed to risk, for it will be recollected that the membranous portion of the urethra is first opened, and then the blades of the lithotome are sprung. Their obli-

quity *outwards*, from this point, is such that the ducts cannot be injured, while, the blades not passing the limits of the prostate, the vesiculæ cannot be reached.—*American Journal of Med. Science, April*, 1852, *p.* 407.

100.—ON CALCULI IN THE FEMALE BLADDER.

By John Adams, Esq., Surgeon to the London Hospital.

Experience appears to show, that the removal of a calculus from the female bladder, after the neck of the latter and the canal of the urethra have been gradually dilated by forceps constructed for the purpose, sponge tents or otherwise, is a preferable proceeding to its removal after the urethra has been incised. It also demonstrates, that dilatation can be carried on to an extent which, in the absence of well-authenticated facts, would appear almost incredible. The most remarkable case among those recorded with which I am acquainted is one related in the first volume of the 'Medico-Chirurgical Transactions.' It occurred in the practice of Mr. Okes, of Cambridge. The patient was eleven years old. Sponge tents, gradually increased in size, with string attached, were introduced into the urethra, opium, preceded by purging, being administered. The sponge was used morning and evening, for three successive days. The urethra was sufficiently dilated, on the third day, to allow of the calculus being withdrawn. It is stated, that the stone measured in circumference, at its major axis, 3¾ inches; in its minor, 3½ inches. The calculus was seized in its long axis, and therefore the urethra must have been distended by the calculus and the thickness of the forceps to a circle of at least 3¾. Incontinence of urine lasted only three days.

This plan of treatment by dilatation is in imitation of that made use of in the natural efforts to get rid of a calculus from the female bladder, the stone itself acting as the dilating power; and numerous remarkable instances are on record of calculi thus voided, without any subsequent incontinence of urine. In far the greater number of cases, however, in which the calculi have been large, incontinence of urine, which was a marked antecedent symptom, has persisted; this, probably, arising from ulceration at the neck of the bladder, in consequence of the pressure of the foreign body. Thus, there is in the London Hospital Museum a calculus which was removed from a woman by the late Mr. Headington. Its anterior extremity was found sticking in the urethra, and the entire stone was removed easily by traction of the two index fingers. It measured 3½ inches long, 2 inches broad, 1⅛ inch thick, 7¾ inches round its larger, and 5½ inches in its smaller circumference. Incontinence of urine lasted till death. The fact of incapability of retaining the urine usually following the natural method of expulsion, when the calculus has been large, suggests the propriety of operating without any unnecessary delay, in order to avoid this inconvenient and distressing sequence.

[Mr. Adams relates three interesting cases, and then proceeds to say:]

In the treatment of the first case, it was contemplated to remove the calculus entire, but, as the urethra had given way slightly at its lower and anterior part after the last dilatation, it was deemed prudent to desist from further extension of the canal; and to crush the stone and remove it piecemeal, which was easily effected at different operations. It might have been surmised, that the presence of the fragments in the bladder would have given rise to such an amount of irritation as to call for their removal at one operation. This was not found to be the case; and it was considered that the aggregate amount of irritation was not so great as would in all probability have taken place had all the fragments been taken away at one operation—a proceeding which would have involved much time, and in which, from the frequent application of the instrument for extraction, an amount of injury might have been induced, which would not, in all probability, have been well tolerated.

In no case did the chloroform appear of more eminent service; for, without this agent, the pain induced, and the restlessness of the patient in consequence, would have rendered the process of dilatation, and the subsequent operations for extracting the fragments, much more difficult than they were found to be.

The second case is interesting, inasmuch as the operation for removal of the calculus consisted partly of dilatation of the urethra, and partly of incision. In

consequence of dilatation having been had recourse to in the first instance, the incision subsequently practised was but slight and limited in extent, and incontinence of urine continued only a few days.

In the third case, the symptoms were of that aggravated character, both locally and constitutionally, that it was considered imprudent to wait during the time requisite for the gradual dilatation of the urethra; and an incision of that canal was made. This incision was as limited in extent as possible, the stone having been previously brought to the neck of the bladder, and the latter having been rendered tense prior to the incision of it and of the urethra.—*Med. Times and Gazette, July 17, 1852, p. 67.*

101.—ON PUNCTURING THE BLADDER THROUGH THE RECTUM FOR COMPLETE RETENTION OF URINE.

By JOHN HILTON, Esq., F.R.S., Surgeon to Guy's Hospital.

[Mr. Hilton examines this subject the more carefully on account of the opprobrium which has been cast upon it by many surgeons. He relates the following case.

G. H., 66 years old, was admitted Nov. 19, 1851. His diathesis is strumous, and he is labouring at present under caries of the ribs. Twelve years ago he had gonorrhœa, and soon afterwards symptoms of stricture presented themselves. Seven months before admission the difficulty in passing urine was much greater, it became thick and offensive, and he experienced intense burning pain in the perineum.]

What might have been the cause of this burning pain in this case of old stricture? Probably the unhealthy state of the urethra behind the bulb, in which region there was possibly ulceration going on; in fact the greatest pain and the greatest mischief were seated *behind* the stricture. This is a most valuable symptom, and teaches the surgeon at once which is the probable state of parts in the case in hand; but I proceed with the case.

"Three small and hard swellings formed in the perineum; they slowly increased for three weeks, when the largest, about the size of a pigeon's egg, burst, and discharged a quantity of fœtid, yellow, turbid, and watery fluid. The patient again applied to a surgeon, who afforded some relief by the introduction of a catheter, and medicines."

Let us stop a moment to inquire what were those small and hard tumours situated upon the course of the urethra in the perineum? Now there are many surgeons who take a wrong view touching these tumours, and are afraid to interfere. Do not imitate them, but plunge the knife fearlessly into them. You will generally find these swellings hard, slow of growth, and somewhat painful on pressure. They remain hard for a long time, and retain a remarkable definite form, giving to the inexperienced touch the idea of a solid tumour; for the layer of fascia surrounding the corpus spongiosum yields but very gradually to the pressure of pent-up urine or pus, and the shape remains regular until the fascia bursts. If in practice you find such tumours in a case of old-standing stricture, and there be some feverish symptoms, do not be afraid, as I stated before, of opening those obscure abscesses. You will thus give exit to fetid pus, and considerably relieve the patient.

"After the passing of the catheter, the man had shivering fits every other day, followed by intense heat over the whole body, which heat was in its turn succeeded by profuse perspiration."

Pray give a few moments' reflection to this shivering. It may be excited by catheterism, and it may result from a slight extravasation of urine, but not of blood. I must confess I do not understand the exact *modus operandi* of such causes. I can say to you it is caused by irritation; but that does not explain anything. What is shivering, in fact? It is an involuntary act of some sets of muscles, which, in ordinary circumstances, are under the control of the will; and the action must emanate directly from the spinal marrow. This dynamic influence of the medulla spinalis must be the real cause of the symptoms, whether the shivering arise from ague, formation of purulent matter, or extravasation of urine; for the control of the will is in each case temporarily destroyed, and the action is automatic. It is not an easy matter to show how the irritation, or disturbing cause,

whatever it may be, proceeds to the spinal marrow, and how it leads to such temporary consequences. But let us proceed with the case.

"At the end of a week the patient was somewhat better, but up to the time of his admission he had not, at any time, passed more than a few drops of urine through the meatus, the greater portion of the fluid having continued to escape from the fistulous openings in the perineum. These apertures had, however, been gradually closing up, and were succeeded by hard, nodular masses. The day before admission, the man was seized with absolute retention; he sent for a surgeon, who, after repeated and determined attempts to pass a catheter, causing very great pain and bleeding from the urethra, failed in accomplishing his object."

I shall here remark that it is always a serious matter to excite, with an instrument, any bleeding from the urethra. This laceration of the mucous membrane should always, if possible, be avoided, for it may be followed by results of a very unpleasant kind. I am aware that bleeding from the meatus is generally looked upon as a trifling accident; but I would warn you to beware giving rise to such hemorrhage; a single drop of blood is a mark of injury. Do not think too lightly of it—it is the evidence of mischief.—*Lancet, Sept.* 11, 1852, *p.* 235.

102.—ON PUNCTURING THE BLADDER THROUGH THE SYMPHYSIS PUBIS.

By Henry T. Chapman, Esq., late Senior Surgeon to St. George's and St. James's Dispensary.

[The following description of an operation for the relief of distended bladder, was communicated to the 'Lancet' by Dr. Chapman, in consequence of no allusion having been made to such a mode of operation, during the recent discussion on this subject at the Medico-Chirurgical Society. It was performed by Dr. Brander, Surgeon in the East India Company's service, and published in the 'Transactions of the Medical and Physical Society of Calcutta' for 1838.]

Commencing his memoir by a critical review of the three operations by which the bladder is ordinarily reached, and setting forth the difficulties, inconveniences, and dangers, attending them all, Dr. Brander states, that it occurred to him, from a consideration of the anatomical relations of the viscus, that there was yet one situation, which had hitherto been overlooked, where the bladder, in its normal condition, approached nearer to the external surface of the body than at any other point, and where, moreover, the simplicity of its relations promised not only to facilitate its puncture, but, at the same time, very materially to diminish the risk and inconveniences of the operation. This situation is the symphysis pubis; and Dr. Brander at once proceeded to verify his impression of its superior eligibility by introducing a trocar into the bladder, at this point, in the dead body, and afterwards dissecting the parts carefully. The satisfactory result of his experiments induced him, at a subsequent period, to operate on the living subject, and with complete success, *quoad* the operation; the death of the patient, in a few weeks, from another malady, affording him the opportunity of a post-mortem examination, which demonstrated that no injury had been caused by the puncture, either to the organ itself or to any other part, the small wound being so perfectly healed that its cicatrix could scarcely be detected.

The particulars of a second successful case are given in the appendix to the same volume; and Dr. Brander informed me, when in England on furlough last year, that two more operations of the kind had since been performed in India. He employs a flattened trocar, and has never experienced the slightest difficulty in plunging it directly into the bladder, through the centre of the fibro-cartilage, in the dead or living subject. In his first operation, he divided the soft parts over the symphysis before introducing the trocar; in his second, he dispensed with this preliminary.

In the absence of Dr. Brander's data, I lay before your readers the following details of two trials of the operation which I have made upon the dead body. After injecting half a pint of water, I attempted, in the first instance, to pass Ponteau's curved trocar, used for puncture of the bladder from the rectum, through the symphysis; but it was too large to enter. I then tried a small hydrocele trocar,

which glided readily between the bones and drew off some water. On opening the abdomen, I found that the canula, which was little more than two inches in length, had barely penetrated the bladder, but an incision through a considerable layer of fat over the os pubis allowed me to push it nearly an inch farther. The canula had entered the bladder midway between the vesical orifice of the urethra below and the reflected peritoneum above, a full inch from the latter, even in the undistended state of the organ. The passage between the bones lay exactly in the centre of the symphysis, where it recedes downwards and backwards at the root of the penis. The direction of the instrument was at right angles with the symphysis, or at an angle of forty-five degrees with the axis of the body prolonged between the thighs. At no other point would the trocar enter, nor could I give it any other direction.

In my second experiment I used a flattened, curved trocar, rather more than four inches in length, with a lancet point, the canula of which, in its narrow diameter, was not larger than a No. 3 catheter. With my fore-finger resting firmly on the side of the canula, about two inches from the point, as a guard, I experienced no difficulty in introducing thus much of the instrument into the bladder at the spot indicated, and drew off its contents in a full stream. On laying open the bladder, an inch of the canula projected into its cavity, this subject being much emaciated. I then pressed it forward until the entire four inches had been introduced; but even now its extremity did not come in contact with the opposite mucous lining, as the curve of the canula gave it a more downward course than that taken by the straight hydrocele trocar. As nearly as I could judge, it pointed towards the junction of the sacrum with the os coccygis.

The facility and immunity from danger of this operation will scarcely, I think, be disputed. The peritoneum cannot be wounded, even should the bladder not have risen above the pubes. There are no vessels nor other important parts to be avoided, and extravasation is far less to be apprehended in this situation than in any other. On the last point I may mention, that, having removed the bladder in order to examine more minutely the seat of puncture, I could no longer discover the orifice; and although the viscus was then filled with water, and considerable pressure made upon it, not one drop escaped. It would thus appear that should the canula be withdrawn immediately after evacuation by puncture, or its point accidentally slip out of the bladder, there would be little or no risk of effusion; the walls of the bladder gliding upon each other to such an extent during its contraction as to produce a valvular closure of the opening. Ossific union of the two bones is the only obstacle which seems likely in any case to impede the passage of the instrument; but this occurs far too seldom to be brought forward as a valid objection to the operation.

Admitting that retention of urine may be relieved in the vast majority of instances without tapping the bladder, what, I ask, are we to do in those extreme cases where the prospect of extravasation is imminent, and yet, in Mr. Simon's words, "no instrument can find its way into the bladder, nor one drop of urine out of it?" Two very opposite courses were severally advocated in the discussion of Mr. Cock's paper, at the Medico-Chirurgical Society, by those gentlemen who impugned the necessity of resorting to puncture. Mr. Arnold was for skilfully forcing the stricture; nearly all the other speakers were in favour of baths, opium, and croton oil, and perseverance in *la médicine expectante*.

Now, it is most true that the point of a catheter may be, and often is, very successfully driven into the bladder, through every obstacle, by a bold and dexterous manipulator. But I have seen much mischief done—and that at the hands of surgeons of no mean distinction—by forcing a stricture, closed by inflammation or congestion, rather than have recourse to any of the current modes of puncture for the evacuation of an over-distended bladder, all of them more or less formidable, that I cannot but regard hopefully Dr. Brander's comparatively slight operation, as an alternative infinitely preferable when some decided step for relief can no longer be delayed.

And, on the other hand, is there no small risk that forbearance may sometimes be carried too far? The chances of ulceration of the urethra behind the stricture are in direct proportion to the violence and duration of inflammatory action. But should it turn out that we possess a tolerably safe and certain means of emptying

the bladder, which will enable us at an earlier period than would perhaps be justifiable by any of the old operations, not only to remove the most urgent and dangerous symptom, but to take off the strain upon the inflamed part, which, as long as it lasts, is calculated to neutralize both antiphlogistic and sedative measures, all danger of ulceration may thus be avoided, and time will be afforded us to push the treatment of the stricture to a successful issue.

Where the urethra has actually given way, or even where a *suspicion* of ulceration exists, few surgeons, I think, would hesitate to adopt the modified perineal operation described and practised by Mr. Simon, which is, nevertheless, still a somewhat formidable affair. Puncture through the symphysis pubis, however, appears to me to bid fair, not merely to displace the supra-pubic operation "in those very rare cases of prostatic tumour" to which Mr. Simon would seem to restrict it, but, by obviating the danger of rupture of the urethra as a consequence of retention of urine, to supersede Mr. Simon's and all other methods of puncturing the bladder for its relief.—*Lancet*, *July* 10, 1852, *p.* 42.

103.—ON HYDROCELE.

By Bransby B. Cooper, Esq, F.R.S., Senior Surgeon to Guy's Hospital, &c.

[In our last volume, page 247, will be found Mr. Cooper's remarks on the treatment of simple hydrocele, taken from his clinical lectures at Guy's Hospital. In his succeeding lectures on the same subject, Mr. Cooper considers, first, *the Diagnosis of Hydrocele*; second, *Congenital Hydrocele*; and lastly, *Encysted Hydrocele*.]

Diagnosis of Hydrocele.—A hydrocele may be mistaken for a hernia, diseased testicle, varicocele, or hæmatocele; or it may, in fact, be combined with any of these diseases,—a circumstance which would tend greatly to increase the difficulty of the case, both with respect to diagnosis and treatment. In addition to this, hydrocele itself is subject to varieties; it may be congenital, encysted or diffused; the fluid may be contained in the whole cavity of the tunica vaginalis, or the latter may be divided, in consequence of adhesive inflammation, into two or more distinct cavities, each containing fluid, the whole constituting what is termed a multiform hydrocele.

The collection of serum may likewise not only be situated in the scrotum, but in the inguinal canal; or it may form a small tumour just below the external ring, between it and the testicle, varying, in this respect, from the common form of the disease. The knowledge that these modifications exist, is sufficient to show the necessity for a careful examination into all the circumstances, both constitutional and physical, attendant upon the formation of a tumour in the scrotum, before the diagnosis can be confidently formed, or appropriate treatment adopted. One of the most frequent deviations from the ordinary conditions of a hydrocele is absence of transparency, a peculiarity which tends, perhaps, more than any other, to render the diagnosis obscure and uncertain; while, in its presence, scarcely any other sign of hydrocele need be sought for, the transparency of the tumour being in itself a sufficient proof that it can contain nothing more than a translucent fluid. The fact of the tumour being transparent, although conclusive as to the disease being hydrocele, does not still, however, prove that the hydrocele is not complicated with some other disease; the surgeon must therefore examine closely into this point, and must likewise make himself acquainted with the peculiar character of the hydrocele itself. In the case I quoted at the commencement, the transparency of the tumour was evident at the first examination; but, as I have already said, this diagnostic mark is often either entirely absent, or at least very obscure. The circumstance which may interfere with the transparency of a hydrocele, are thickening of the skin, œdema of the cellular membrane, hypertrophy of the dartos and of the cremaster muscle, thickening of the tunica vaginalis, and opacity of the secreted fluid. I have seen several cases in which, owing to different circumstances, transparency was quite absent from the tumour. Any cutaneous disease in the scrotum may destroy the diaphanous condition of the skin of this part, and obscure the transparency of a hydrocele; but in that case, the appearance of the part externally would account for the loss of transparency; and if the other symp-

toms of the disease were present, the condition of the skin of the scrotum would scarcely produce much difficulty in forming a just diagnosis. Œdema of the cellular membrane may prove very difficult to distinguish from hydrocele, for in its general appearance the scrotum would then closely resemble hydrocele, with the single exception of wanting transparency. Upon a close examination of the case, it will, however, be found, that the patient manifests a general anasarca, that the tumour *pits* upon pressure, instead of being elastic, and that generally both sides of the scrotum are affected at the same time. I once had a private case in which there was even a distinct amount of transparency in the scrotal tumour; I therefore punctured it with the trocar; but a few drops only of serum exuded, and I found that I had been so far deceived by the transparency as to puncture an œdematous scrotum, in the belief that it was hydrocele. In this case I made small punctures in different parts of the scrotum, serum exuded, and the patient recovered from the disease. I have seen several cases of this kind, and in some of them the swelling had extended up one or both cords. Such cases should be first treated by puncture, to evacuate the fluid, and afterwards by constitutional remedies, to combat the anasarcous tendency. Hernia and hydrocele may be concomitant with each other; the latter being the consequence of some morbid change produced in the tunica vaginalis by the influence of the protruding intestine,—hypertrophy of the dartos and cremaster muscle often accompanying this complication,—so that the transmission of light through the structures covering the tumours is entirely prevented.

In 1840, Mr. Salt, of Dunmow, sent me a gentleman who had a hernia, and who consequently always wore a truss; in spite of this a tumour formed in the scrotum, and this, naturally enough, was looked upon by the patient as caused by his rupture. Upon examining the swelling, I found it perfectly isolated from the abdomen. I tried it by light in the usual way, but could discover no transparency. I therefore thought it right to explore the swelling. This I did by cutting down to the tunica vaginalis; and at the time I did this I was under the impression that the swelling was a hæmatocele, which might have been caused by the pressure of the truss. When I exposed the cremaster muscle, I found it, as well as the dartos, much thickened. Upon dividing the cremaster, I exposed the tunica vaginalis, and I perceived at once that this was distended with fluid. I laid it open, evacuated a quantity of the fluid usually found in a hydrocele,—performing what is called the operation by *incision*. The patient perfectly recovered.

In cases of difficulty, requiring exploration, I believe the mode of operating just described to be safer than any other, but it does not always produce a radical cure. In operating for hernia, I have frequently found a hydrocele of the tunica vaginalis connected with it, especially when the hernia has been congenital.

A common cause of absence of transparency in a hydrocele is thickening of the tunica vaginalis itself. In such cases, it must obviously be impossible to tell by mere examination whether the want of transparency proceeds from thickening of the tumour, or from some alteration in the character of the fluid within the tumour. If (with the exception of transparency) every other indication of hydrocele be present, there can be no reason why we should not in these cases proceed at once to tap the tumour with a trocar; but if there be other circumstances to complicate the case, we ought to proceed by exploration, as I have just described. I had a patient in Philip Ward, Guy's Hospital, who had a tumour of the scrotum which presented all the appearances of hydrocele; it had existed for twelve months: and he stated, that during its growth it had given him no inconvenience beyond that which arose from its weight; fluctuation was indistinct in this case, there was total want of transparency, and the weight of the tumour was unusually great in proportion to its size. I determined to evacuate the contents of the tumour by incision; I therefore proceeded cautiously to cut down upon the tunica vaginalis; I found it extremely thickened, highly vascular, and presenting altogether a very unnatural appearance; the evacuated fluid was like coffee-grounds. The patient stated that he had struck the tumour about three months before, and that from that time its weight had much increased; probably it was then that the blood was effused, which gave to the

fluid its peculiar colour and appearance. I have had other cases in which I found the tunica vaginalis very much thickened, particularly when an operation had been performed previously. Only a few days ago I operated, a second time, upon the hydrocele of a gentleman, and, according to my invariable practice, examined the tumour before operating, to ascertain if the transparency were present; it was now, however, quite opaque, although it was transparent at the time of the first operation, all the other signs of hydrocele being present. I nevertheless proceeded to tap the tumour. I now found the tunica vaginalis so thickened as to offer considerable resistance to the entrance of the trocar; but the fluid was precisely similar to that usually secreted in this disease, and to what I had drawn off in the first operation. In a case which I admitted, some time ago, into the hospital, there existed a large swelling in the scrotum, which I could not distinguish with certainty to be a hydrocele; I therefore opened the tunica vaginalis by incision, and let out a quantity of brownish fluid. The tunic itself was very much thickened, cartilaginous in many places, and at its upper part quite ossified.

Mr. Cock had a somewhat similar case, in which the tunic had become quite cartilaginous, and was thrown off by sloughing, after an incision had been made into it. Ossification of the tunic is not unfrequent; this would, of course, necessarily destroy the transparency in hydrocele; probably, wherever the formation of cartilage has commenced in the tunic, ossification would ultimately ensue. There is scarcely an hospital museum in London which does not contain numerous specimens of these peculiar conditions of the tunica vaginalis; that of the College of Surgeons is particularly rich in them.

The contents of common hydrocele are subject to changes which may entirely destroy the transparency of the fluid, and would, of course, tend as much to render the tumour itself opaque as any changes in its tissues could do. Ordinarily, this fluid is of a yellowish or straw colour, quite transparent, having a specific gravity of about 1020, which is rather less than that of the serum of the blood; it coagulates by heat, and by the addition of mineral acids, but less firmly than blood serum, in consequence of its containing less albumen; it contains also the saline matters of the serum. The quantity of fluid present in a hydrocele may vary from an ounce to several pints; I think six ounces may be taken as the average quantity.

Sometimes this fluid is quite turbid, and of a milky whiteness, resembling, indeed, a mixture of milk and serum; in acute cases, following external injury, the fluid will often be found of a reddish hue, or even as dark as coffee, according to the quantity of blood it contains. A large quantity of cholesterine is sometimes found in the fluid of a hydrocele; this substance presents a crystalline appearance upon the surface of the fluid after it has cooled; if this be skimmed off, it will be found to dissolve in boiling alcohol, from which it again separates in the crystalline form of large flat plates on cooling; these are insoluble in caustic potassa. Flakes of fibrin, portions of amorphous coagulated albumen, fatty matter, and even small cartilaginous bodies, are sometimes detected in the fluid of common hydrocele. When extraneous substances are found in the fluid, it is usual for the tunica vaginalis itself to have undergone some of the morbid changes I have already described, besides that which causes it to secrete the serous fluid; in chronic cases it will often be found, as I have already described, thickened, cartilaginous, or even bony; these conditions are, however, invariably attended by some constitutional derangement. From a reconsideration of all these abnormal conditions, it is clear, therefore, that the nature of the fluid and the condition of the tissues and testicle should all engage the attention of the surgeon; by these he will know whether the disorder is to be considered local or constitutional, the treatment being regulated accordingly.

Orchitis, from any cause, may lead to the formation of a hydrocele, and if the fluid secreted be transparent, the diagnostic mark will be sufficiently obvious from the tumour being opaque posteriorly and transparent anteriorly; but even should the swelling be opaque, the history of the case, the weight of the tumour in proportion to its size, and the characteristic pain of an inflamed testicle, will usually sufficiently explain the nature of the case. I have met with several such cases, and have rarely found it necessary to treat them as hydrocele, but employ

the usual antiphlogistic remedies to allay the inflammation of the testicle, and then, by applying blue ointment and camphor with gentle pressure upon the scrotum, the inflammation and the hydrocele generally disappear together. The disorder will not, however, terminate thus should the orchitis arise from a syphilitic taint, nothing but mercury will then effect a cure. Sir Astley Cooper has published a case in which hydrocele was combined with syphilitic orchitis; the fluid had been previously drawn off, but had quickly re-accumulated, and the patient had consulted Sir Astley with the object of getting the hydrocele injected; but he, observing that there were present copper-coloured syphilitic blotches, recommended that the operation of injecting the tumour should not be attempted until the secondary symptoms were cured. Mercury was accordingly administered, and the consequence was, that the orchitis, cutaneous eruption, and hydrocele, all disappeared together. I have never seen a case exactly resembling this. Mr. Roberts, of Finsbury-square, sent me a gentleman who had swelled testicle with hydrocele. I drew off the water, and treated the swelled testicle as if enlarged from common inflammation; the hydrocele quickly returned, but the disease in the testicle remained. The patient had no sore throat, nor eruption, nor any other indication of syphilis, although he stated that he had had a chancre four months before. I ordered him calomel and opium night and morning, which was continued until he became constitutionally affected by the mercury, when the testicle was cured and the hydrocele entirely removed. Three or four such cases have occurred in my practice, but, I must acknowledge, with equal evidence of syphilitic taint. When the important feature of transparency is absent from the tumour from any of the causes I have described, the diagnosis must be formed, either positively, from the presence of other signs of hydrocele, or negatively, by ascertaining that none of the diseases with which hydrocele may be complicated are the cause of the enlargement of the part; in that case the swelling can only be the consequence of hydrocele, or some anomalous disease. Under these difficult circumstances, the surgeon should proceed with great caution; for, although the tumour may consist of nothing more than a collection of water, the treatment can only be judiciously regulated by a complete knowledge of the exact position of the fluid and the peculiar structure affected. If an exploration be determined on, it must be pursued with great care, either by puncture with a grooved needle, or by making a careful incision in the tumour; the latter is, I think, the safer operation, as it may be performed under the guiding influence of the sight as well as of the hand. Even when the tumour is transparent, a difficulty may arise in consequence of the testicle being in an abnormal situation within the scrotum. It is usually situated behind and rather below the centre of the tumour; but it sometimes happens that the testicle is adherent to the tunica vaginalis reflexa, and is placed in front of the swelling. When the parts are in this condition the testicle is in danger of being pierced by the trocar; if the hydrocele be transparent, there is no excuse for such a catastrophe, for the next relative situation of the testicle with the hydrocele may generally be discovered. If the swelling be opaque, the abnormal situation of the testicle can be ascertained by manipulation, as the tumour is fluctuating laterally and posteriorly, but not in front, at the usual point, where, indeed, the resisting hardness will clearly indicate the position of the testicle. I have punctured the tunica vaginalis posteriorly, or at the side of the testicle, in several cases, and I invariably seek for the diagnostic mark of transparency, even if I had tapped the patient before, as the operation may have been the very means of producing the adhesion of the testicle I have just described, and, without precaution, it is very likely to be wounded by the trocar.

On the 30th of June, 1841, a patient was sent to me with a hydrocele: he had already been tapped. I examined the tumour and found there was but little transparency, although, strictly speaking, something of this character could be distinguished. I proceeded to draw off the fluid. In introducing the trocar, I felt a very considerable resistance, and, when I withdrew the instrument, no fluid followed; the patient also complained of a pain in the part, which led me to believe that the testicle had been wounded. I immediately removed the canula, and, upon again examining the tumour with a light, I perceived that it was quite transparent at its posterior part. I then introduced the trocar in this transparent

part of the tumour, and drew off seven ounces of fluid. I did not inject the tunic in this case, as I had at first intended; but, nevertheless, the patient was radically cured, and that, too, without suffering any ill effects from the accidental injury of the testicle. There are few operative surgeons who have not at some time fallen into the above error.

I have remarked, in a former part of my lecture, that hydrocele may be mistaken for hernia. I need scarcely say how grave an error this would be, particularly if the surgeon were to attempt an operation. Generally, I do not, however, think it very difficult to distinguish a common hydrocele, under all circumstances, from a swelling caused by protrusion of viscera from the abdomen, especially from the circumstance that hydrocele, being unconnected with the abdomen, does not receive those peculiar motions which are always imparted to the visceral protrusion by contraction of the abdominal muscles, as in coughing: and that a very different character is discovered by manipulation between the contents of a hernial sac and those of a hydrocele, the latter being incompressible, resembling a bladder filled with water, whereas a hernia feels either soft and plastic as it were, or gives the idea of being distended with gas. Hydrocele and hernia are not unfrequently combined, as in the case I have already described, of the little boy. It appears not unlikely, indeed, that hydrocele may induce hernia, by drawing down, and perhaps weakening, the parts about the scrotum. In treating hydrocele, when thus combined with hernia, the latter ought first to be reduced, and, even then, I should prefer not injecting the sac of the hydrocele, but merely content myself with drawing off the fluid. Although I do not distinctly perceive that danger could arise from throwing in the injection, still, as more or less inflammation follows this operation, I should take the safer ground, and only employ the palliative treatment.

I do not think, practically, there is much danger of taking a hydrocele for varicocele, unless it be a congenital hydrocele. In fact, the character of varicocele is quite different to hydrocele when the tumour is handled, for, instead of appearing to be a closed sac filled with fluid, it is evidently caused by a mass of tortuous vessels from which the blood is free to flow or be expressed by slight force. It is true, in congenital hydrocele the fluid can be forced out of the tumour; but, in that case, the transparency of the tumour would be diagnostic of its being hydrocele. If there be insuperable difficulties in distinguishing the nature of the swelling in the scrotum by ordinary examination, careful exploration ought to be resorted to, exactly as I have already described. This is the only plan for the surgeon to follow, if he desires to escape the dangerous contingencies which would be attendant upon any other active method of treatment.

[*Congenital Hydrocele.*—On the treatment of this kind of hydrocele Mr. Cooper remarks:]

The treatment in congenital hydrocele must be very different to that in the common hydrocele. The best mode of treatment is first to draw off the fluid, then to apply pressure upon the external abdominal ring to cause adhesion between the walls of the canal through which the tunica vaginalis communicates with the abdomen. If this can be effected, the congenital is at once brought into the state of ordinary hydrocele, and may be subjected to exactly the same treatment. Constitutional as well as mechanical treatment must be adopted, with the object of correcting the tendency to the formation of a fresh collection of fluid after the first quantity is drawn off. The pressure upon the ring is best made by a truss; but it is clear, that any contrivance which permits of the application of continuous pressure would answer equally well with a truss. Under any circumstances, I cannot think it right to attempt the radical cure of congenital hydrocele by injection; that is to say, so long as it remains in its congenital form. I should never venture to inject such a hydrocele, or to use any other local means for its radical cure; for I think that any treatment which would excite inflammation in the tunic would be attended with great danger, owing to the impossibility of confining the inflammation to the scrotum. Many of the French surgeons take, however, a different view of the subject, and do not hesitate to inject congenital hydrocele, only taking the precaution to press firmly upon the ring during the time the irritating fluid is being thrown into the tunic, and to prevent it from passing into the abdomen. After all, this must, I think,

be a dangerous experiment; for although, by mechanical pressure, it is perhaps not difficult to keep the fluid itself out of the cavity of the peritoneum, pressure on the ring would prove a very ineffectual means of keeping the inflammation from extending from the tunica vaginalis to the peritoneum, which is, after all, the whole source of the danger. Independently of the danger, there is another argument against injecting a congenital hydrocele: it is quite unnecessary to run the risk, for in all such cases the connection between the scrotum and the peritoneum is easily obliterated when pressure is applied after the fluid has been drawn off in the common way. After adhesion has been produced in the canal, the fluid in the tunic is sometimes absorbed spontaneously; this may be promoted by the application of lotions, and in young subjects by acupuncturation in the scrotum. Occasionally, congenital hydrocele may be spontaneously converted into common hydrocele, owing to the irritation excited by the presence of the fluid in the tunic, producing adhesive inflammation at the point where the cavities communicate, when, in consequence, complete obliteration of the point of communication ensues.

Congenital hydrocele is very common in newly-born infants. The only treatment required is to press the fluid back into the abdomen, apply a slight compress upon the external ring, and keep the scrotum constantly wetted with a stimulating lotion. In children, this treatment will seldom fail to produce obliteration of the communication between the scrotum and abdomen, which will be followed by absorption of the fluid in the tunica vaginalis; indeed, this is generally effectual up to to the period of puberty.

I have stated before, that the condition of the parts which leads to congenital hydrocele, may exist without any accumulation of fluid taking place; but such a person is always subject to these accumulations, and at whatever period of life they may occur, the disease is still termed congenital.

It is not always easy to diagnose a tumour in the scrotum, as a congenital hydrocele, as it is not uncommon for intestine to protrude into the narrowed neck of the tunica vaginalis, at the internal ring, so as to prevent the fluid from passing back into the abdomen. There is, however, another diagnostic mark in congenital hydrocele, which it is useful to remember,—the testicle is generally placed quite at the lower part of the tumour, which makes it appear as if a smaller tumour were superadded to the chief mass. If the tumour be transparent, the testicle may be seen lying below the collection of fluid.

Congenital hydrocele is very likely to be complicated with congenital hernia, and every precaution must be taken in ascertaining the presence or absence of hernia, before a truss is applied; if intestine be discovered protruding at the internal ring, it must be returned into the cavity of the abdomen, the fluid then evacuated from the tunica vaginalis, and a truss applied. This will tend equally to produce the cure of the hydrocele and the hernia as far as relates to the congenital form, for the hernia cannot return if the communication be obliterated; and should the hydrocele recur, it would only be in the common form, and not congenital.

Hydrocele of the spermatic chord is a variety of hydrocele in which the tumour extends from the scrotum through the external as high up as the internal ring, giving to the swelling a sort of hour-glass form, in consequence of its being constricted by the external ring. This variety of hydrocele is produced by the obliteration of the communication being limited, not extending, as it usually does, from the internal to the external ring. The tumour itself takes its elongated form, owing to the fluid extending into and filling the tunica vaginalis of the chord as well as that of the testicle. In these cases, after the fluid has been drawn off in the usual way, the sac should not be injected until it has been ascertained beyond question, that hernia is not concomitant with the hydrocele; for as I have explained, a hernia may prevent the fluid from passing up into the abdomen, even if the hydrocele be congenital. Therefore, before the injection is employed, we ought to learn satisfactorily, that the canal between the serous cavities of the scrotum and abdomen is sealed by permanent adhesion.

In 1844, Mr. H., a gentleman from Norfolk, aged 37, consulted me with a swelling of the scrotum, which had every sign of common hydrocele, with the exception that the apex of the pyramidal tumour extended through the external

up to the internal ring. The tumour was perfectly transparent, and the testicle was in the usual position. I at first thought it was a congenital hydrocele; but was not able to press the fluid into the abdomen. I therefore tapped the hydrocele, and then examined for the purpose of discovering whether there was any hernial protrusion through the internal ring; finding no protrusion whatever, I recognised the case as a complication of the common hydrocele of the tunica vaginalis testis and chord. I injected it at once with the solution of iodine. The patient was perfectly cured.

Hydrocele of the chord alone is another variety of hydrocele; in this the fluid is contained within the serous sac of the chord, and not in the tunica vaginalis testis.

A short time ago, one of my dressers drew my attention to a patient who had come into the surgery for relief. He had a tumour in the scrotum, between the testicle and external ring; the testicle being in no way implicated with the swelling. The tumour was about the size of a bantam's egg, nearly incompressible; offering, therefore, but very indistinct fluctuation; no transparency could be perceived; it was quite unattached to the skin, which moved freely over it; and I felt assured that the tumour contained fluid, and, as the man stated that he had received a blow, I had some suspicion of its being chronic abscess. I punctured the tumor, and let out about half an ounce of serum of the usual appearance of hydrocele fluid, straw-coloured and coagulable; it contained no spermatozoa, proving it to be hydrocele of the chord. I enlarged my opening, passed my little finger into the tunic, and felt that the sac was completely closed, both towards the external ring and the tunica vaginalis of the testicle. The sac became obliterated, and the patient got well.

This tumour must necessarily have resulted from a peculiar obstruction of the tunica vaginalis of the chord at different points of its course, isolating the fluid both from the testicle and the inguinal canal.

We find, therefore, that the accumulation of fluid may take place in the scrotum, between the testicle and the external ring, as in the case just read, or in the inguinal canal between the two rings; in either case, the diagnosis is more difficult than in common hydrocele; the form of the tumour is different, being round instead of pyramidal; it is also generally smaller, and its comparative weight is less; the fluctuation is often very indistinct, and the transparency altogether absent, in consequence of the small quantity of fluid in the tumour not producing sufficient attenuation of the involved tunics. Indeed, the physical indications of hydrocele upon which we generally rely, are, in these cases, very indistinct; at the same time, I believe that an experienced surgeon will possess sufficient tact to enable him to form a correct diagnosis, without much difficulty, as to the presence of fluid in the tumour; but it is, I think, almost impossible to ascertain whether the fluid be placed within or without the serous sac. In the latter case, the tumour comes under the denomination of encysted hydrocele,—a form of the disease which, properly speaking, has nothing whatever to do with the pathology of serous cavities, and which will hereafter be described.

When hydrocele of the chord is situated between the external ring and the testicle, it forms a small rounded tumour, perfectly isolated from the parietes of the abdomen, and on that account, under proper examination, it cannot be mistaken for a hernia. It is tense, and cannot be emptied by pressure; nor does its form alter by change of position; therefore, it cannot be varicocele; and, though the regularity of its surface, added to fluctuation, will lead the surgeon to infer that it is neither a fibrous nor a fatty tumour, at the same time, it should be known, the last point is not always to be determined without difficulty.

Mr. G., of Wisbeach, aged 42, consulted me in April last, being the subject of a tumour in the scrotum, of which he gave the following account:—Twenty years before, in jumping on a horse's back, he injured the scrotum, and very soon after perceived a slight swelling, which gradually increased in size, and seemed to him, as he said, like a third testicle. It had latterly become enlarged, and gave him pain; it had acquired the size of a pullet's egg. Upon examination, my first impression was, that the tumour was omental hernia; but, upon closer investigation, I found it quite isolated from the cavity of the abdomen. I then suspected it to be encysted hydrocele, or hydrocele of the chord; but the absence of fluctuation and trans-

parency, and a peculiar sensation of general solidity in the tumour, rendered the diagnosis to me so inexplicable, that I sent the patient to Sir Benjamin Brodie, who wrote me word, that he believed it to be either a steatoma or a fibrous tumour, and referred me to his 'Lectures on Pathology and Surgery' (p. 271), where he relates a similar case.

The patient now told me, that he had already consulted Mr. Lawrence, who, it seems, had formed a just diagnosis, as he had told the patient that it was a swelling which must be cut out. I therefore recommended him to return to Mr. Lawrence; but, from what I have heard, I believe the operation has never been performed,—consequently, the case remains still involved in mystery. Is it not possible, that this may have been originally a case of hæmatocele, in which the fibrin had become organized, and adherent to the tunica vaginalis?—a possible condition, as proved by a preparation of John Hunter's, in the Museum of the College of Surgeons.

Having ascertained that the enlargement is not caused by any of the diseased conditions mentioned above, we shall perceive, that the presumption must be, that it is hydrocele of the chord, either external or internal to the tunica vaginalis of the chord. Which of these varieties it is, can only be proved by examining the fluid after evacuation. So much difference will be found between the fluid from the two kinds of hydrocele, that the diagnosis may be at once established with ease from this circumstance.

Within the last week, a patient, between twenty and thirty years of age, came into the hospital with a tumour in the scrotum of rather a doubtful character. Some time before, he had received a blow upon the scrotum, and the tumour began to form soon after the injury; it was placed on the anterior part of the scrotum, between the testicle and the external ring; it was round, very circumscribed, and so tense, as not to give the diagnostic fluctuation. With difficulty and careful examination, it was discovered to be transparent, although not to a great extent. I considered it to be encysted hydrocele. I tapped it, and evacuated yellow serous fluid, like that of ordinary hydrocele; this fluid did not contain spermatozoa, which, with its general character, abundantly proved to my mind, that the disease was hydrocele of the chord.

[*Encysted Hydrocele.*—Mr. Cooper next proceeds to encysted hydrocele, on which subject he says:]

This is not, properly speaking, a disease of serous membranes. The fluid is not contained in a normal cavity, but is secreted by an adventitious cyst, itself the result of a diseased action. The fluid which these cysts contain is very different from that of common hydrocele; it does not at all partake of the character of serum, but is an aqueous fluid, of very low specific gravity, about 1004 or 1006, very little above distilled water, generally limpid and colourless, and containing but a small quantity of albumen, so that it does not coagulate like the fluid of ordinary hydrocele, by the application of heat or strong acids, but merely becomes turbid. It contains a considerable amount of chloride of sodium. The quantity of fluid obtained from these cysts is generally small, not often exceeding half an ounce. In a few cases I have, however, obtained several ounces.

There is one circumstance constituting a grand characteristic connected with the fluid of encysted hydrocele: it invariably, so far as my experience goes (and I have an opportunity of examining a great number of cases), contains spermatozoa, generally in motion. Upon placing a drop of this colourless fluid under the microscope, these will be readily seen; and this is so constantly the case, that if I draw off from a hydrocele a limpid, colourless fluid, I look for the spermatozoa as a matter of course. Mr. Liston was the first to point out this circumstance.

On the 21st of February, 1850, Mr. G., aged 44, consulted me for a large swelling on the left side of the scrotum, unaccompanied by any pain, and merely inconvenient from its weight and size. He could give no account of the cause of the enlargement, unless, he said, it could be attributed to a blow he had received on the part two years before; but that the increase of size of the scrotum was, at any rate, not immediate upon the infliction of the injury. He had observed an enlargement of the part about twenty months, but it had increased one-half of its present size in the last six months, but has been all along free from pain.

The tumour communicated, upon manipulation, a general sensation of fluctua-

tion, and upon examination with a candle in a dark closet, it was found more than usually transparent. I therefore at once tapped it, under the impression that it was hydrocele of the tunica vaginalis, and drew off ℥xviii. of fluid, when I was immediately struck with its colourless and limpid appearance. I suspected, therefore, that it was a case of encysted hydrocele, and immediately placed a portion of the fluid under the microscope, when numerous spermatozoa were discovered in active motion. The specific gravity of the fluid was only 1004, and heat, on the addition of nitric acid, merely gave a turbidity to the effusion,—proving the wide difference between it and the secretion from a common hydrocele. In six weeks the fluid began to form again, and in July the swelling had returned to a considerable extent; and I therefore proposed to Mr. G., not only to submit to the same operation to which he had before been exposed, but also to consent to the attempt at the radical cure, to which he readily acceded; and on the 10th of July, 1850, I drew off ℥xvi. of fluid, which still contained an abundance of spermatozoa. I, however, injected the hydrocele, throwing in ℥ss. of the compound tincture of iodine and a drachm and a half of distilled water, and leaving it in the sac to become absorbed. But little inflammation followed, and the patient became permanently cured.

March 19, 1850. Sir H. F., Bart., aged 53, requested me to tap his hydrocele,—an operation to which he had been before exposed, I believe, upon two occasions. There was nothing peculiar in the appearance of the swelling, nor could he attribute the disease to any cause. He suffered no pain. The swelling communicated a distinct sensation of fluctuation upon pressure, and was transparent when a candle was placed behind it. I drew off four ounces of fluid, when the appearance of the secretion immediately convinced me of the presence of spermatozoa, which the examination under the microscope proved to be correct. The sp. gr. of the fluid was 1·006, and heat or nitric acid only produced slight turbidity, constituting, in my opinion, an evidence of the disease being an encysted hydrocele. An evaporating lotion was ordered, and some aperient medicine. In four months after, this gentleman came to me again, when I performed the operation for a radical cure, by injecting the compound tincture of iodine and water, in the proportion of one-fourth of the tincture, and the hydrocele was cured. In this case, a considerable degree of inflammation followed the injection, which was, perhaps, partly attributable to a long walk taken the day after the operation.

June 3rd, 1851. Mr. S., aged 56, was sent to me, from Hertfordshire, the patient being considered to be the subject of a diseased testicle. Upon entering into the history of the case, I was led to doubt the justness of the diagnosis, for the patient described he had never suffered any pain, neither in the part nor in the loins, and probably the absence of transparency had led to the suspicion of the testicle itself being the seat of the disease. After a most careful examination, I came to the opinion that the disease was hydrocele, and proceeded at once to draw off the fluid, when about eleven ounces of clear, colourless fluid was evacuated. The sp. gr. of the fluid was 1·005, and the addition of nitric acid or heat produced merely a slight turbidity. Placed under the microscope, numerous spermatozoa were seen, a few mucous corpuscles, and several epithelium scales were also detected. When the fluid had been drawn off, the testicle was found adherent to the back part of the scrotum, and the patient being of a strumous diathesis, it is very probable that a small strumous abscess might have opened itself into the tunica vaginalis at some earlier period of life, and led to the formation of the hydrocele; at the same time this would account for the presence of the spermatozoa. Nor is this inconsistent with the account given by the patient of never having suffered pain; for how frequently do we find advanced cases of chronic abscess of the testicle unattended by any pain whatever?

On the 22nd July, 1851, Mr. J. G., aged 46, was sent to me from Kent, with an anomalous swelling in the scrotum, the nature of which my medical friend could not make out to his own satisfaction. Upon examination, I found a tumour, about the size of a testicle, situated between the head of the epididymis and the spermatic chord, which, upon pressure, produced the sensation of pain, as if the epididymis or testicle itself had been compressed. Nothing like fluctuation could be detected, but it rather gave the feeling of being lobulated, like steatoma, to which I was inclined to attribute the swelling; or, at any rate, I had, at this period

of the investigation, made up my mind to its being of a solid nature, either fat or fibrous, and was, perhaps, led to that suspicion, from having seen a case of steatoma in the scrotum a few weeks previously,—a case which was seen both by Sir Benjamin Brodie and Mr. Lawrence. I proceeded, however, to examine the tumour, in a dark closet, by transmitted light, when I immediately discovered its perfect transparency; proving at once the existence of fluid, although no fluctuation could be detected, probably from the tension of the containing cyst. I drew off the fluid with a very small trocar and canula, and evacuated three drachms of colourless fluid, which was of very low specific gravity, contained abundance of spermatozoa, and scarcely a trace of albumen could be detected, either by heat or nitric acid. No epithelium scales or mucus could be detected in the fluid.

Encysted and diffused hydrocele have been considered by many as the same disease, with the exception, that the fluid of the encysted hydrocele is contained in an adventitious sac. I believe, however, that they are quite distinct diseases, and that what is termed diffused hydrocele consists merely in an anasarcous collection of fluid, caused by a constitutional tendency to œdematous effusions, or by some mechanical interruption to the circulation of the blood through the spermatic veins, leading to a deposition of serum within the cellular membrane of the part affected. I think that encysted hydrocele is always more or less connected with the tubuli seminiferi of the testicle, or epididymis or vas deferens of the chord. How does it otherwise happen that spermatozoa are always found in the fluid? The peculiar pain, as if the testicle were pinched, when the hydrocele itself is compressed, is another evidence of the testicle being involved in the disease; if such cysts were merely adventitious, or simple sero-cysts, there could be no reason for their containing spermatozoa, nor for the cysts being always connected with the testicle, epididymis, or spermatic chord, a condition which invariably exists, and which proves, I think, that there is some reciprocal action going on between the excretory ducts of the testicle and the cysts themselves. It is, nevertheless, very difficult to arrive at a satisfactory conclusion respecting the exact character of these cysts, or to explain why the fluid which they contain should always be mixed with semen. Small cystiform growths are commonly met with in connexion with different parts of the testicle, but these are generally very small and pedunculated, and are more frequently fleshy or cartilaginous than cysts containing fluid. I have examined the contents of many of these small growths, and have never found traces of spermatozoa in them; therefore it is clear that they differ from the cysts containing the kind of fluid already described, and which constitute a peculiar variety of hydrocele. One thing is certain; the cyst or encysted hydrocele communicates in some way with the secreting or excreting apparatus of the testicle. How that communication is made remains yet to be explained. It is not, I think, impossible, that, like cystiform growths in other parts of the body, these cysts may commence in dilation of the tubuli seminiferi, the walls of which under irritation may thicken to a sufficient degree to enable them to support the pressure of the fluid secreted within them. Such a cyst may perhaps be formed in the same manner, and, indeed, resembles in every respect a common sero-cyst; but when found in connexion with the excreting apparatus of the testicle, the fluid they contained would necessarily be mixed with some of the secretion peculiar to the organ in which the cyst is situated.

I cannot help thinking that it is only through the means of direct communication that these cysts obtain the admixture of semen with the fluid which they contain. It has been supposed that a factitious membrane could take on the action of the neighbouring parts, merely in consequence of an extension of the capillary vessels; but I think that much more evidence is yet required to prove the possibility of such a vicarious function; and, as in the examination after death these cystic growths are always found in connexion with some part which secretes or excretes semen, it seems more rational to attribute the presence of that fluid in the contents of the cyst to direct communication. In two or three cases I have met with a modification of the conditions attendant upon what I judged to be encysted hydrocele; and, at the moment, I had some difficulty in understanding the circumstance. The evacuated fluid was straw-
-ured and coagulable, like that of common hydrocele; it was, indeed, a serous

fluid, whereas that in encysted hydrocele is merely aqueous. This yellow fluid contained spermatozoa. After some reflection, I was led to the supposition that encysted hydrocele was in these cases concomitant with common hydrocele of the tunica vaginalis, and that the cyst had burst spontaneously into the tunica vaginalis. I have lately seen a preparation in the Museum of the College of Surgeons which fully explains this apparent anomaly. This is a preparation in which a cyst grew from the anterior superior portion of the testicle, within a hydrocele of the tunica vaginalis.

Having brought my remarks on the subject of hydrocele to a close, a retrospective glance will show that this is not so simple a disease as it is generally considered; that its varieties are very numerous, and that in every one of these there exist some peculiar difficulties of diagnosis; there are many collateral circumstances, also, which interfere with the diagnosis, such as diseases of the parts, either alone or concomitant with hydrocele, as I have pointed out in the course of my lectures. All these difficulties show that, far from being a trifling and easy matter to distinguish and treat hydrocele, it is a disease subject to many perplexing conditions, which render it well worthy the attention of the surgeon. —*Med. Times and Gazette, May* 22, 1852, *p.* 509; *June* 19, *p.* 609; *and Aug.* 28, *p.* 209.

104.—*Treatment of Varicocele by Cauterization.*—M. Bonnet, the eminent surgeon of Lyons, treats varicocele in the following manner. The operator, when the patient is insensible with chloroform, seizes the chord with the four fingers of each hand, and tries to find the vas deferens; as soon as he feels that duct, he allows it to glide back from the veins, and keeps the latter fixed by his fingers. One hand is then made to rest against the inguinal ring, and the other on the testicle, and an assistant is then desired to apply a peculiar kind of forceps on the veins which lie between the operator's hands. This forceps is supplied with two little rods, which produce the same compression as the hands when the latter are taken off, and likewise keep the vas deferens at the back of the veins. When the forceps is properly fixed, a transverse incision is to be made across the veins, about an inch and a half in length, and the soft parts are divided until the veins come into view, the operator taking care not to wound the latter. It is important that all the bleeding vessels, even the smallest, should be immediately tied: three or four ligatures are generally necessary. The whole wound is then covered with a paste of chloride of zinc, which is allowed to stay for twenty-four hours. The paste is taken off the next day, and the layer of cauterized parts is removed with the bistoury, their thickness being generally about one-third of an inch; and the forceps are then also to be loosened, so that the pressure be not exercised too long. A fresh layer of chloride-of-zinc paste is put on the spot where the eschar has been removed, and is again allowed to remain for twenty-four hours. At the expiration of this time the forceps is removed, and this concludes the operation.

Eight or nine days afterwards, a white eschar, about an inch square, falls off, and this is found to contain the whole of the veins. The latter may easily be known by the dark blood filling the tortuous convolutions. The pain is very severe for the first two or three days, and there is indeed much suffering until the eschar finally falls off. The scrotum and testicles generally become œdematous and inflamed, but the excitement ceases immediately the cauterized parts are detached. The fever and œdema are mostly trifling; no venesection or any other antiphlogistic means are ever required; as soon as the eschar falls off, the patient is as well as if he had not undergone any operation. He generally may leave his bed a fortnight after the cauterization, and the whole treatment does not last more than one month. M. Bonnet prefers this mode of operating to M. Vidal's subcutaneous ligatures and rolling up of the veins. It must, however, be confessed that the severe pain is a great drawback to M. Bonnet's operation.—*Bull. de Thérap.—Lancet, Sept.* 11, 1852, *p.* 244.

105.—ON THE TREATMENT OF VESICO-VAGINAL FISTULA.

By Dr. J. Marion Sims, Montgomery, Ala., U. S.

The relative position of the fistula has served generally as the basis of a classification. Thus we have:—

1st. The urethro-vaginal, where the fistula is confined to the urethra.

2nd. Those fistulæ situated at the neck of the bladder, or root of the urethra, destroying the trigonus vesicalis.

3rd. Those of the body and *bas-fond* of the bladder, of which, Velpeau says, "there is no fact, up to the present time, which proves indisputably that they have ever been cured."

4th. The utero-vesical, where the opening communicates with the body or cervix of the uterus.

I have never met with one of the last-named class; but of the others I have seen a great variety, embracing almost every possible shape and size.

The position of the patient for the operation, the speculum, the means of vivifying the edges of the fistulous opening, the suture apparatus, and the catheter which I shall describe, are, I believe, original with myself, having been suggested by the peculiarities of individual cases. The final perfection of these mechanical contrivances has been the slow work of experiment.

At the first, I had three cases, upon which I operated about forty times, but failed in every instance to effect a perfect cure, though succeeding so far as to encourage me to persevere. Now, I think I may say that almost every case of this hitherto intractable affection is rendered perfectly curable.

Before detailing my operation, it may be interesting historically to take a brief survey of the surgery of this disease up to the present time.

For the last half century, though surgeons have laboured assiduously to cure it, they have almost always been unsuccessful. Cases have, now and then, been remedied, but they were so few that no general principles of treatment could be established, and, consequently, no certainty of success, in any single instance, could be predicated.

The *suture* was, of course, the first surgical appliance that suggested itself to the mind of operators. It was used in all its various modifications without success. The great difficulty of applying the suture, and its signal failure, caused surgeons to invent a number of instrumental apparatuses, all of which are clumsy and complicated.

As a curiosity, let me here introduce a description of the apparatus of Lallemand, the distinguished professor, of Montpellier:—

"It is composed—1st, of a large canula about four inches long; 2nd, of a double hook, which is moved in the principal instrument by means of a stem, in such manner as to push it out, or to make it enter its sheath; 3rd, of a circular plate which terminates the other extremity of the canula, and which would hinder, if necessary, this latter from penetrating too deep into the urethra; and 4th, of a cork-screw spring, intended to draw forward the small hooks as soon as they are inserted in the posterior lip of the fistula. The canula, being passed into the bladder, allows of our pushing the two small hooks into the vagina through the vesico-vaginal septum, which latter is supported by the left forefinger. By making a turn of the screw, they are kept in this position; a pledget of lint, or fine linen, designed for protecting the tissues, is then placed between the front part of the urethra and the external plate of the canula; finally, we relax the spring, which acts then, at the same time, by making traction on the posterior lip with its hooks, and by pressing backwards the lower wall of the urethra, by means of the circular plate, or the lint, which serves as its *point d'appui*. By a mechanism which would be too long for description, we may regulate the stop of the spring in such manner that there will only result from it a moderate degree of pressure, though sufficient for bringing the two borders of the fistula in contact.—(*Velpeau*, vol. iii., p. 852.)

The apparatus of Lewziski, of Dupuytren, of Laugier, of Fabbri, and others, are equally complicated, quite as unfit to fulfil the proper indications of treatment, and, by experience, have proved as wholly worthless.

Others have attempted to improve different stages of the operation. Thus

Colombat praises his spiroidal needle for passing a whip suture in longitudinal fistulæ, and M. Sanson has proposed to enlarge the urethra by a double lithotome for the purpose of carrying the finger through the urethra into the bladder, merely to depress the fistula towards the vulval opening; while Wutzer proposes, and performs in a great number of cases, the high operation of paracentesis vesicæ, confining his patient for several days on her abdomen, by means of cushions, straps, and buckles.

These are referred to as historical facts, and not for any good that could possibly result from them.

While all these formidable contrivances and the suture, have failed so signally, *cauterization* has but little more to boast of in the way of success. Very small fistulous openings have occasionally been reported as cured by the application of the nitrate of silver, a catheter being retained in the bladder: but, in fistulæ of any size, it has proved entirely abortive.

To show how utterly hopeless have been all our efforts heretofore, we may allude to a suggestion of some of the French surgeons to apply the Taliacotian method of anaplasty to this operation, which has actually been repeatedly performed by Roux, Jobert, and others; and, also, to the operation of M. Vidal, for an "obturation of the vulva," whereby the bladder and vagina became a grand compound receptacle of the urine and menstrual secretion. It is an idle waste of time to dwell longer on means so perfectly ineffectual, not to say mischievous.

But have no useful, practical suggestions been made, as yet, by any one on the treatment of vesico-vaginal fistula? Yes: two names stand out in bold relief amongst those who have devoted some time and attention to this subject. I allude to our own countryman, Mettauer, who uses leaden sutures; and to the indefatigable Jobert, who is the author of the operation of *autoplastie par glissement*. The first, by his plan, has cured several cases; while the latter has achieved a greater degree of success than any other surgeon.

Thus, all that we know on the subject worth knowing is due to America and France; while German and British surgery have done comparatively nothing for the amelioration of this loathsome and troublesome disease.

Many of our systematic works pass it over in silence, or dismiss it with a few remarks discouraging all attempts at treatment. Samuel Cooper, in his great 'Surgical Dictionary,' does not introduce the subject even by name; while Liston devotes less than a page to it. Alluding to the application of the heated wire, he says: "By this means a small opening may occasionally be made to heal up. But when the communication is to a large extent, but little hope remains to the patient." Fergusson, Gibson, and others say nothing about it; while Miller dismisses it as summarily as did Liston. But how could it be otherwise, when its mechanical treatment is so imperfect that no general principles could be laid down?

It is not my intention to allude to all that has been attempted by different surgeons; but it is equally a duty and a pleasure here to chronicle what has been done by our own countrymen who lay any claims to originality and credit.

The first successful case in this country is, I believe, by Dr. Hayward, of Boston. The following is his description of the operation:—

"The patient was placed on the edge of a table, in the same position as in the operation for lithotomy. The parts being well dilated, I introduced a large bougie into the urethra, and carried it back as far as the fistula. In this way I was able to bring the fistula downwards, so that the opening was brought fairly into view. The bougie being then taken by an assistant, I made a rapid incision with a scalpel around the fistula, about a line from its edges, and then removed the whole circumference of the orifice. As soon as the bleeding, which was slight, had ceased, I dissected up the membrane of the vagina from the bladder, all around the opening, to the extent of about three lines. This was done partly with the view of increasing the chance of union, by presenting a larger surface, and partly to prevent the necessity of carrying the needles through the bladder. I then introduced a needle, about the third of an inch from the edge of the wound, through the membrane of the vagina, and the cellular membrane beneath, and brought it out at the opposite side, at about an equal distance. Before the needle was drawn through, a second and a third were introduced the same way; and these being found sufficient to close the orifice, they were carried through, and the threads tightly tied. Each

thread was left about three inches in length."—(*Am. Journal Med. Sciences, Aug.* 1839.)

Besides this case, Dr. Hayward has recently reported eight others, operated upon since August, 1840, two of which were entirely successful. He says:

"The operation was done in every instance by ligature. The result has, on the whole, been satisfactory. Anything that is calculated to remove this infirmity, or to lessen in the slightest degree the sufferings of the individuals who are afflicted with it, should be made known.

"I had never seen the operation done until I did it myself, nor could I find any description of the mode which others had adopted, that was sufficiently clear and explicit to be of much service. I had, therefore, to take such a course as I thought safe, and at the same time likely to effect the object, viz. the closure of the fissure. I do not know that others may not have operated precisely in the same way; but if they have, I am not aware of it.

"I performed the operation twenty times, but it was done on nine patients only, one being operated on six times, another five, two twice, and five once."—(*Boston Med. and Surg. Journal*, vol. xliv., No. 11. April 16, 1851.)

Dr. Pancoast, of Philadelphia, has operated successfully in two cases, by the following method:—

"The peculiarity of the operation consists, virtually, in attaching the two sides of the abnormal opening firmly together, on the principle of the tongue and groove, so as to get four raw surfaces in contact, and thus increase the probabilities of union by the first intention. For this purpose it is necessary that the margins of the fistula should have considerable thickness, and when not found in this state, they are to be thickened by repeated applications of lunar caustic; or, better still, of the actual cautery.

"Having exposed the fistulous orifice as thoroughly as possible with a Charrière's speculum, from which the sliding blade has been removed, an assistant at the same time drawing the vestibulum well up towards the front of the pubes, my first object in the operation is to split the most posterior margin of the fistula to the depth of half an inch. I next pare off the edges of the other lip of the fistula, so as to bring it into a wedge shape; first reversing it as much as possible with a small blunt hook, and trimming off the mucous membrane on the side next the bladder with the curved scissors or scalpel, and then detaching, in like manner, the vaginal mucous membrane, to the breadth of three quarters of an inch, along the whole extent of the lip. This was a very difficult but most important part of the process. Having checked the bleeding by the use of astringent applications, my next object is to insert the raw wedge or tongue, into which one of the lips of the fistula has been converted, into the groove which has been cut in the other, and hold them in close connection. This I accomplish by the means of a peculiar suture that might be called the plastic, and in the same way that I have described its application in reference to some plastic operations in my 'Operative Surgery;' and in the 'American Journal of the Medical Sciences' for October, 1842.

"When the sutures are knotted firmly, the tongue or wedge will be found immovably imbedded in the groove. The sutures I leave for two weeks or more, or until they become loose. A gum catheter should be kept in the bladder to prevent the accumulation of urine. To keep the inflammation from running to a destructive height, a bladder of cold water should be applied for thirty-six hours to the vulva.

"On the second or third day, I direct the frequent injection of a solution of zinci sulph. into the vagina, in order to increase the tone of the parts. On the fourth or fifth day, I apply to the line of union a solution of lunar caustic with a camel's hair pencil. This application should be made twice in the twenty-four hours, the solution being gradually increased in strength. Union by first intention may be expected to take place under this treatment to a considerable extent; at such points as it should fail to occur, union by second intention is to be promoted by the use of lunar caustic in substance, so as to raise a bed of granulations on the raw surfaces of the lips, while they are held in contact by the plastic suture.

"In one case, there was a complete destruction of a cross section of the whole urethral structure, near the neck of the bladder; in the other, there was an

elongated orifice in the *bas-fond* of the bladder, which would more than admit the end of the finger."—(*Med. Examiner*, May, 1847.)

Dr. Mettauer's operation, the peculiarity of which consists in the use of leaden sutures, is described in the 'Am. Jour. Med. Sciences' for July, 1847, to which I beg leave to refer the reader for particulars.

Having thus briefly alluded to what has been done, up to the present time, for the treatment of this affection, I shall now proceed to detail my own operation.

I conceive that I may claim originality: 1st. For the discovery of a method by which the vagina can be thoroughly explored, and the operation easily performed.

2nd. For the introduction of a new suture apparatus, which lies imbedded in the tissues for an indefinite period without danger of cutting its way out, as do silk ligatures.

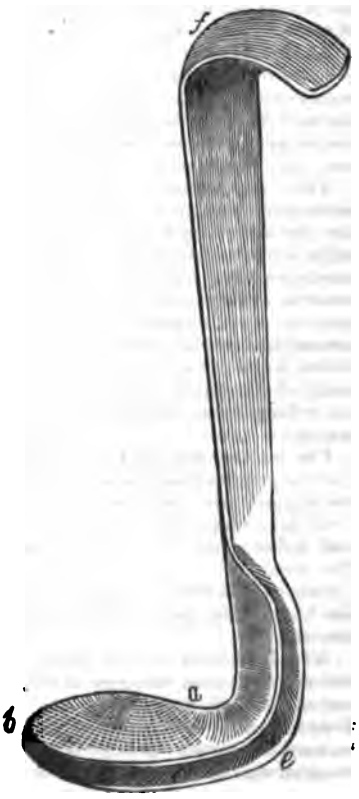
And 3rd. For the invention of a self-retaining catheter, which can be worn with the greatest comfort by the patient during the whole process of treatment.

Of the position of the patient for the operation.—With the exception of Velpeau and Chelius, all other operators, even Jobert, recommend that the patient be placed on the back, as in the operation for stone.

Velpeau says, "a round-shaped mattress is placed under the *belly*, in such manner as to enable her to keep her thighs flexed, *while lying upon her abdomen*. An assistant keeps the vagina dilated by means of a large gutter of metal, horn, or thin wood."

Chelius directs "the patient to be placed on her *belly* upon a table covered with a mattress, so that she may kneel near its edge, with her head and chest bent forwards, and supported with small bolsters. The operator sits between the patient's thighs, upon a seat of proper height, so that his arms should not soon tire."

Fig. 1.



In 1845, previously to the translation of either Velpeau or Chelius, I hit upon the proper plan of exploring the vagina in these cases; but to the latter is due the first published account of even a hint towards that method.

In order to obtain a correct view of the vaginal canal, I place the patient upon a table about 2½ by 4 feet, on her knees, with the nates elevated, and the head and shoulders depressed. The knees must be separated some six or eight inches, the thighs at about right angles with the table, and the clothing all thoroughly loosened, so that there shall be no compression of the abdominal parietes. An assistant on each side lays a hand on the fold between the glutei muscles and the thigh, the ends of the fingers extending quite to the labia majora; then, by simultaneously pulling the nates upwards and outwards, the os externum opens, the pelvic and abdominal viscera all gravitate towards the epigastric region, the atmosphere enters the vagina, and there, pressing with a weight of 14lbs. upon the square inch, soon stretches this canal out to its utmost limits, affording an easy view of the os tincæ, fistula, &c.

To facilitate the exhibition of the parts, the assistant on the right side of the patient introduces into the vagina the lever speculum, and then, by lifting the perineum, stretching the sphincter, and raising up the recto-vaginal septum, it is as easy to view the whole vaginal canal as it is to examine the fauces by turning a mouth widely open, up to a strong light. This method of exhibiting the parts is not only useful in these cases, but in all affections of the os and cervix uteri requiring ocular inspection. The most painful organic diseases, such as corroding ulcer, carcinoma, &c., may be thus exposed without inflicting the least pain, while any local treatment may be instituted without danger of injuring the healthy structures. By this method, also, a proper estimate, anatomically, can be had of the shape and capacity of the vagina; for where there is no organic change, no contraction, and no rigidity of it from sloughs, ulcers, and cicatrices, and where the uterus is movable, this canal immediately swells out to an enormous extent, thus showing its great expansibility.

Fig. 1 represents the speculum. When introduced and held properly, it causes no pain whatever. It is well enough to have two or three of different sizes, so as to be prepared for any case. The one ordinarily used by me is about 2¼ inches from *a*, where it supports the sphincter, to its terminal extremity at *b*. Its concavity *c c*, serves to reflect a strong light on the vagino-vesical septum, the seat of fistula. Its breath from *d* to *e* is about ⅛ths of an inch, widening a little as it approaches the end, making it somewhat in the shape of a duck's bill. The handle is made strong and unyielding, because a considerable degree of leverage has to be exercised by it. The curve at *f*, being cushioned to prevent its hurting the forefinger, fits accurately over it. The whole instrument is made of German silver, the concavity being highly polished for reflecting the light.

A small, slightly convex spatula (of German silver), may occasionally be needed to press the urethra downwards against the symphysis pubis, when there is a very minute fistula in the neighbourhood of the trigonus vesicalis; particularly if the urethral folds are very redundant. This will seldom be used, but it is sometimes indispensable, not only in exploration, but in holding the healthy parts out of the way in passing sutures.

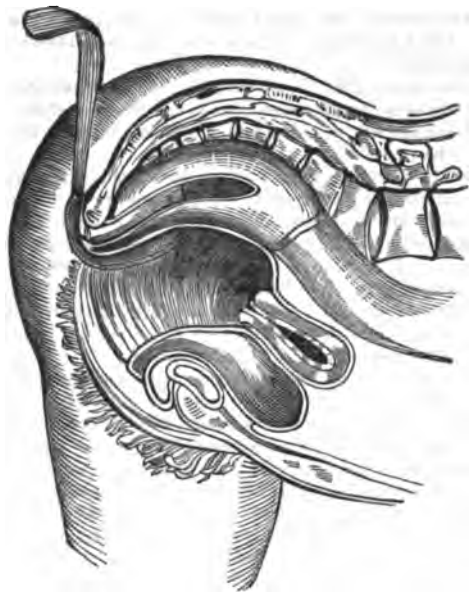
These simple instruments, with this position and a good light, are all that are necessary for obtaining an accurate view of the parts. If the vagina and outlet are ordinarily capacious, a good strong northern light, of a clear day, from a large solitary window, is all sufficient. But if this canal has been narrowed by cicatrices after extensive sloughs, or from other causes, then sun-light is absolutely necessary for every stage of the operation from first to last. For this purpose a small table is placed near a window admitting the sun-light. An assistant, sitting by, adjusts on the table a glass, some eight or ten inches in diameter, so as to throw the rays of the light into the vagina, which, passing to the right of the operator, and striking the concave surface of the bright speculum, are reflected down on the anterior vaginal parietes, making everything perfectly distinct.

Fig. 2 shows the speculum introduced, elevating and supporting the sphincter; also the relative positions of the organs, when the patient is examined as directed; the vaginal canal being distended to its greatest capacity.

Of scarifying the edges of the fistulous opening.—This was the most tedious and difficult part of the operation with me, as it has always been with others. For three or four years, I had great trouble in getting such instruments made as I thought indicated; but those I now use for this purpose are so simple, that they can be had anywhere. A delicate tenaculum and a sharp-pointed knife are alone necessary.

The tenaculum is very small; the curve being at right angles with the shaft, and not more than one-third of an inch long. If longer, it is not easily managed, nor so generally applicable to any and every part of the fistula. The shaft, some five or six inches long, is set into a firm handle. Of this size and shape, it can be used to elevate the edge of the opening with equal facility, whether laterally or otherwise: while, if curved at more than a right angle, it can be useful only in hooking up and drawing forward the anterior and posterior margins.

Fig. 2.



[By means of the tenaculum the edge of the fistula is elevated, and the part is separated by the knife so held up. The process is continued until the edge of the opening is well vivified all round.]

The denudation is to be from a quarter to the third of an inch wide. I have often made the mistake of not removing enough of the callous edge; but I now take good care to remove it freely, extending the scarification up on the vaginal surface. I do not remove any of the lining membrane of the bladder, unless it is very much altered in character, and projects through the fistula into the vagina in such a way as to obstruct the easy performance of the operation; which rarely happens, and only where there is a great loss of substance.

Where the fistula is very small, say not larger than a common-sized probe, or even as small as a number seven or eight sewing needle, the best plan to scarify is, to hook up the part with the tenaculum, pull it forward, and by a thrust of the knife transfix the entire thickness of the vagino-vesical septum; then by a circular sweep of the instrument, the whole fistulous track may be removed at once; which substitutes for the small and callous opening, a smoothly cut orifice of rather a conical shape, large enough to admit the end of the forefinger.

Where the fistula is so small, there is always an abundance of tissue, and there need be no fear of removing the parts freely; for it is easier to close properly an opening as large as the end of the finger, than a smaller one, provided there is no scarcity of texture.

When the fistula, on the other hand, is very large, there is occasionally some trouble in determining exactly what to cut; because by the bearing down, sobbing, straining, or even voluntary resistance of the patient, the mucous membrane of the bladder may be forced out in voluminous folds, so as to render the fistulous edges indistinct, and there is danger of scarifying, either too high up on the vaginal surface, or too far in on the vesical lining. To obviate this difficulty, a properly curved metallic bougie may be passed through the urethra up to the fundus of the bladder; thus putting the parts on the stretch and carrying back into its cavity, the apparently redundant lining. The bougie curved down between the thighs may be held by a third assistant. But I greatly prefer to introduce a bit of soft sponge, of proper size, into the cavity of the bladder, which forces back the lining membrane, leaving the fistulous boundary distinct, when the scarification may be easily

accomplished. The introduction of the sponge into the cavity of the bladder, or merely between the edges of the fistula, as well as its removal, is always attended with great pain. Once introduced, I allow it to remain, till the sutures are passed and ready to be secured.

During the scarification, there is, of course, always hemorrhage; and, in some instances, it is so profuse as to compel us to desist for a short time, the patient being allowed to change her position and rest. As soon as the bleeding ceases, the operation may be resumed.

To remove the blood from the cut surface during the scarification, a probang is necessary, which is made by tying a nice bit of sponge to the end of a piece of whalebone some eight or ten inches long. It is well enough to have two or three of these, which will keep one assistant pretty busy to wash clear of blood at this stage of the process. The probang can generally be best applied by the operator, as his position allows him to see exactly where it is most needed.

I cannot lay too much stress on the great necessity of perfecting well this part of the operation; for upon a proper and free denudation of the fistulous orifice, success or failure will mainly depend.

Sometimes one edge of the fistula is thinner than another. Velpeau and others have noticed this fact; but in not a single instance have I found (as they did) the thinner edge behind and the thicker before. Where there was any appreciable difference, the reverse was the fact in every case that I have as yet examined. This thinning of the anterior edge, where it was right at the neck of the bladder, was always a serious obstacle to the proper closure of the fistula. By giving way too soon, it almost invariably left an opening at the point of its greatest thinning. This, however, is a peculiarity belonging to individual cases, and will be dwelt on more particularly when we come to describe them.

Of the Suture Apparatus.—Sutures all serve the same general purpose, viz. the bringing and holding together parts that we wish to unite. They are variously named, according to circumstances—as the Interrupted, because it is solitary; the Continued, because a plurality of them are joined together; the Quilled, because of the peculiar method of securing it; and the Twisted for a similar reason.

The one that I use for closing vesico-vaginal fistulæ, I have termed clamp suture, from its peculiar method of action. Thus, if the profession allow me to introduce a new suture by its most appropriate name, we shall then have in general use, sutures named, first, according to their relation, the interrupted and continued; second, according to the method of securing them, the quilled and twisted; and third, according to its method of action, the clamp suture.

As all sutures are but modifications, one of another, so is the clamp a modification of the quilled.

The clamp suture is composed of small annealed silver wire fastened to cross bars, after the manner of quilled suture. The wire is drawn down to about the size of a horse-hair, and then annealed. The cross-bars or clamps are very small, not more than a line in diameter, and made of silver or lead, as most convenient. If of silver, they may be tubular; when of lead, solid. They must be highly polished, and without the slightest asperity, particularly at their extremities. They act as clamps in this way. The parts embraced between them, being held in close apposition, swell upward, and overlap them; while they, by pressure, produce an ulceration in the vaginal surface, sufficient to allow of their being perfectly embedded, and after a while even sometimes hidden from view. This ulcerative process is attended of course with a purulent discharge, which, continuing for three or four days, diminishes, and soon ceases altogether; but not till the bed made by the clamp becomes lined with mucous membrane. After this the apparatus would lie innocuously in the tissue for an indefinite period. I have allowed it to remain long enough for the extremities of the clamps to be covered over completely by firm granulations, which, opposing considerable resistance to their removal, had to be lacerated before this could be accomplished.

This suture is far preferable to anything before suggested for the purpose. Its introduction dates from June, 1849, since which time I have had comparatively little trouble in the treatment of the great majority of cases of vesico-vaginal fistula. Properly applied, this suture never ulcerates out, having always to be removed by means of scissors, hooks, and forceps. It may be allowed to remain

intact for six, eight, or ten days, or even longer. If removed too soon, the delicate cicatrix may gradually yield to the traction of the ascending uterus, or to the force exerted by the bladder in expelling its contents, and thus reproduce a small fistulous orifice to be closed by a subsequent and more cautious operation. I have seen the new cicatrix give way from another cause, and perhaps it is the chief one. The clamps, burrowing in the vaginal surface, leave a deep sulcus or fissure on each side of the new cicatrix, which, when they are removed too soon, fills up by granulation. It is a law of all granulating wounds to contract as they heal, and this contraction on each side of the new cicatrix is often sufficient to pull it gradually apart. But if the clamps are allowed to remain till their sulci are covered with mucous membrane, then there is no danger of this accident, for these chasms then gradually disappear, less by filling up with granulations, than by an absorption of their elevated edges.

Accidents of this sort have happened repeatedly in my hands, from a too early removal of the suture apparatus. Great judgment, which experience alone can give, is necessary to determine the length of time that the sutures ought to remain intact, for no positive rules can be laid down that will answer invariably in every case.

I have also seen serious mischief result from leaving the clamps too long embedded in the parts. Their burrowing and ulceration may extend entirely through the vagino-vesical structure, thereby substituting new fistulous openings for the original one. This complication is by no means incurable, but only prolongs the treatment, and postpones ultimate success.

In two or three instances I have witnessed a still more serious accident from an undue pressure of the clamps, viz. a strangulation of the enclosed fistulous edges, which unfortunately resulted in a sloughing of the tumefied parts, and a consequent enlarging of the opening. In no instance, however, has this accident rendered the case hopeless, or even caused me to feel any concern either for the immediate safety of the patient, or for ultimate success in treatment.

After the scarification is completed, the patient is allowed to rest for a few minutes, before the introduction of the sutures; an operation somewhat tedious but not difficult. The number of sutures will depend on the size of the fistula. Less than two will not suffice for the smallest opening; while the great majority of cases will require three; and, occasionally, we meet with one sufficiently large to demand four.

The needle which I use is awl-shaped, and spear-pointed, with the eye near the point. The shaft is about six inches long; the part near the handle is made malleable, allowing it to be bent into any desirable shape for the purpose of preventing the hand, as it grasps the handle, from obstructing the view of the operator.

To illustrate the method of suture, let us suppose a case, where the fistula is oval, transverse, occupying the *bas-fond* of the bladder, about half way between the urethra and os tincæ, in the medial line, and large enough to admit the end of the index finger. This, in shape, size, and position, is altogether the most favourable case that can occur, both for a neat performance of the operation, and for certainty of success. Such a fistula will require three sutures.

The middle one is first applied. The needle, armed with a silk thread, is entered about half an inch anterior to the scarified edge of the fistula; pushed deeply into the vesical septum, without transfixing it; brought out just at the edge of the mucous lining of the bladder; carried across the opening; made to enter the opposite side at a point corresponding with its direction anteriorly, observing the same precautions in its course; while it is brought out on the vaginal surface about half an inch beyond the scarified part.

The passage of the needle through the anterior edge of the opening is easy enough: but the loose and yielding nature of the posterior, renders some support necessary before it can be made to appear on the vaginal surface. For this purpose a blunt hook is placed flatwise, just beyond the spot at which we intend the needle to come out, thus making a fixed point for it, when it passes with great ease.

[As soon as this has been done, the blunt hook may be laid aside, and the ligature, which lies close by the side of the needle, may be hooked up by the tenacu-

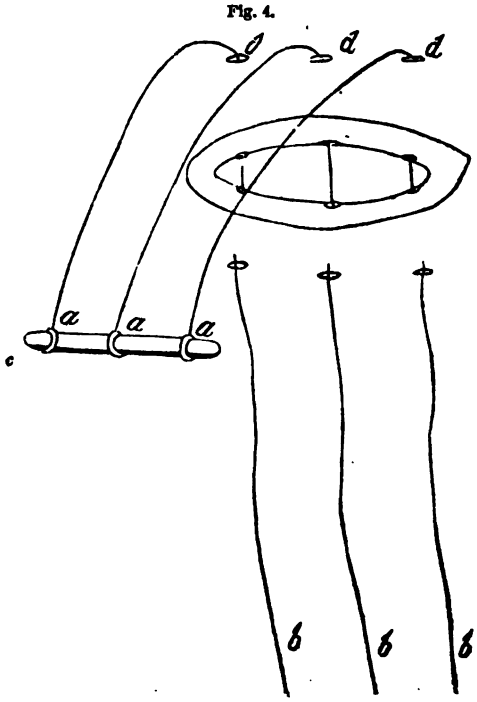
lum. If the light is not good, or the parts contracted, this is not always easy. In this case, the needle should be pushed one-fourth of an inch further on, and then retracted, by which means a loop will be formed, into which the tenaculum can be easily passed. The needle may be now withdrawn, leaving the two ends of the ligature hanging from the vulva. The other ligatures may be passed in the same manner. As great cutting and pain would be experienced on pulling the distal end of the ligature, this may be prevented by passing up a crescent-shaped fork, mounted on a shaft of convenient length, which, pushing the ligature above its furthest point of exit, serves the purpose of a pulley. By this means the ligature can be drawn backward or forward without any pain to the patient.]

Fig. 3.

Having now given directions for passing the ligatures, let us suppose that we have introduced the three, or as many as we want. The difficult part of the operation is over, and we have only to substitute the annealed silver wires for the silk ligatures; which is the work of but a few minutes. Take a piece of the wire twelve or eighteen inches long, making a small crook at one end so as to fasten it securely to one of the ligatures. Fig. 3 shows the wire crooked and hanging to the end of the thread; the other end of the thread being pulled on till it comes out, leaving the wire in its place. In the same way replace the remaining silk ligatures with silver wire; both ends of which project from the vulva, the proximal directed downward, and the distal held upward.

The next step is to secure them by means of the clamps. In Fig. 4 the wires are represented passed, the two ends of each brought out of the vulva; the distal, *a a a*, to the left; the proximal, *b b b*, to the right. The distal ends are passed through small oblong holes made in the silver or leaden bar *c* to suit the distances between the points of suture at *d d d*. The wires may be fastened to the bar or

Fig. 4.



clamp *c*, by being turned twice around it, or by being passed through a perforated shot and bent over it. This done, we now pull upon the proximal ends *b b b*, and, as a matter of course, the bar *c* is carried into the vagina, up above the fistula, and made to occupy a bed right over the orifices *d d d*. Here, the crescent-shaped fork is supplanted by a modification of it, broad enough to serve the purpose of a pulley for all three of the wires. The next step is to pass another bar or clamp on the proximal ends of the wires, and to push it along them into the vagina, till it occupies a position in front of the fistula, corresponding exactly with the one behind it.

Fig. 5 shows the two clamps, one on each side of the fistula, and everything ready for closing it. The proximal clamp is pushed up by the crescent-shaped fork, while the wires are held firmly. This brings the denuded edges of the fistula into such close contact that it would be difficult to enter a common sized probe between them. The force necessary for tightening the clamps will depend upon the judgment of the operator; not enough will allow the parts to gape; while too much, which is the most frequent fault, will produce the bad effects formerly alluded to.

A simple and perfect contrivance now serves to hold the clamps in their proper places. A small bird shot, perforated, is passed along each wire close against the proximal clamp; when, the wires being held securely, they are gently but firmly compressed by means of a long strong pair of forceps, whereby they are made to perform the office of a knot in preventing the clamp from slipping off the wire. The wires are cut off about a fourth or eighth of an inch from the shot, and then bent over, which effectually prevents their slipping off.

Fig. 5.

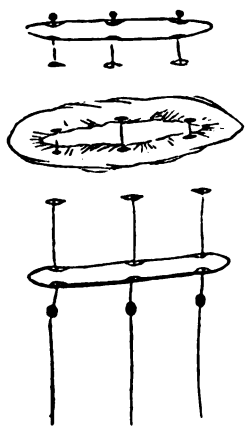


Fig. 6.

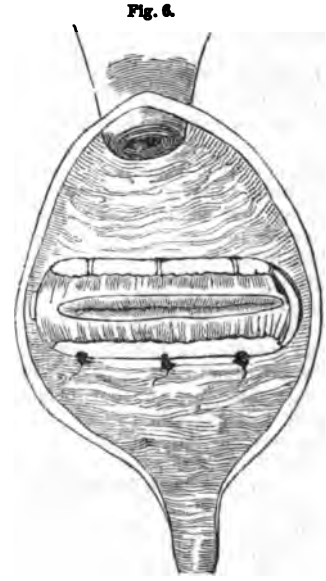


Fig. 6 shows the appearance of the fistula and suture apparatus after the operation; the edges of the opening in apposition; a clamp on each side of it; the flattened shot against the proximal clamp; the wires cut off and bent over the shot, which protects the rectovaginal surface against their sharp ends, as well as prevents their slipping.

The operation, which may have lasted some twenty or thirty minutes, or, under any circumstances, not more than an hour, is now over; and our patient is ready for bed, complaining only of fatigue from the constrained position.

There is one peculiarity about the instruments, which greatly facilitates the operation. For instance, the tenaculum, the needle, the blunt hook, and the

crescent-shaped fork, have their shafts made malleable, so that they may be bent in a direction to keep the hand of the operator below the axis of the vaginal canal, which preserves the line of vision unobstructed.

Of the Catheter.—Surgeons have always felt that something more was necessary to cure a case of vesico-vaginal fistula than merely closing it mechanically. The urine has been the great cause of failure. To prevent its percolation through the closed opening has been regarded, heretofore, as almost insuperable. The catheter was tried by all, but its frequent introduction had a direct tendency to disturb the healing process, and to hasten the mischief it was intended to obviate; while all attempts to secure it permanently in the bladder by any external contrivance has proved abortive.

Desault used a large gum-elastic catheter, "fixed to an apparatus resembling a truss, by means of a moveable silver plate, provided with an aperture for its removal." Tying it to the hairs of the vulva, and other equally useless expedients, have been resorted to.

According to Chelius, the operation of paracentesis vesicæ was practised by Wutzer, who, he says, had the greatest success in the treatment of this disease, having cured three cases out of eighteen. He compliments the efforts of his countryman by saying, "That he has importantly contributed to perfecting the operation, and, by the addition of paracentesis vesicæ, in order more completely to draw off the urine, has advanced considerably further than his predecessors."

Wutzer gives specific directions for puncturing the bladder above the pubes: after which a tube is to be introduced, and "fixed immovably by means of wing screws in the cleft of a previously well fitted belly girdle, after which, the patient should be carefully conveyed to a bed previously prepared, *placed on her belly, upon suitably cut out leather cushions, and properly buckled in it with suitable leather straps.*" I allude to this method of Wutzer, merely to show what desperate efforts have been made to prevent the urine from escaping through the fistula during the process of treatment.

With me, as with others, this has been the most serious obstacle to the success of the operation; for, if a single drop of urine finds its way through the fistulous orifice, it is sure to be followed by more, and thus a failure to some extent is almost inevitable.

Knowing that something to draw off the urine continually was absolutely indispensable to success, and seeing that all other operators had failed to secure a catheter in the bladder by any justifiable external means, I conceived the idea of contriving for this purpose, a self-retaining instrument. A sponge tent was the first thing suggested to my mind. I supposed, if a long narrow piece of sponge could be safely introduced into the bladder, that it would absorb the urine as fast as secreted, which, by capillary attraction, would pass along the sponge, and escape without coming in contact with the fistula. Accordingly a piece of fine sponge some three or four inches long, narrow in the middle, larger at each end, with a strong silk thread passing through its whole length to prevent its being torn, or broken, was first used. Concealed in a bi-valve catheter, it was readily introduced, the middle portion enveloped in gold-beater's skin lying in the urethra, the small flat end occupying the cavity of the bladder, while the larger extremity hung out between the labia. It acted the part of a syphon admirably, every drop of urine passing through it; but unfortunately for my patients (two of whom were experimented on with it), it became encrusted and perfectly saturated with calculous deposits, rendering its removal painful, difficult, and even dangerous. This expedient, promising so much in theory, and performing so ill in practice, was necessarily abandoned.

Following up the idea of a self-retaining apparatus, I next hit upon the following contrivance. I took a piece of gum elastic bougie (No. 5 or 6), some four or five inches long, and made a longitudinal split an inch long entirely through it, beginning about a fourth of an inch below the rounded end. A piece of silver wire, a little longer than the catheter, was passed along it and fastened neatly at its vesical or split extremity. Traction on the lower end of the wire caused the sides of the split to open, which allowed the urine to pass off freely, while the bulging held it securely in the bladder. This seemed,

at first, to promise success, but after trying it in various cases for about twelve months, it, like its predecessor the sponge, had to be laid aside. There were several reasons for its failure. If made of a larger catheter than a No. 5 or 6, it would not open and close with regularity, and hence, would press unequally and injuriously on the fistula; whereas, when made of a No. 5 or 6, its calibre was not large enough to permit a free discharge of the muco-purulent secretion which always attends the use of silken sutures; and this compelled its removal, at least two or three times a day, for the purpose of cleaning it out. Hence, its frequent introduction, with the consequent disturbance to the parts from the opening and shutting of the split end, interfered with the healing process to such an extent as to make it necessary to give up its use entirely.

Foiled in this, I devised another instrument on the self-retaining principle. It was a large silver catheter, curved in opposite directions, giving it a sigmoid form. The end was carried up behind the symphysis pubis, the middle part lay in the urethra, while the extremity hung down between the nates.

This was the first successful approximation to what was really wanted. When the patient lay on the back, the outer end was lower than the base of the bladder, which made it literally a syphon; when she turned on either side, it had a semi-rotation that still kept the internal end upward, while the outer extremity hung downward over the thigh, inviting the easy passage of the urine.

To insure a free discharge of the muco-purulent secretion along with the urine, I made a long narrow slit on each side instead of the holes. To see how the instrument would answer, I introduced it into the bladder of a patient having a very large fistula. Feeling well satisfied with its performance, I attempted to remove it and found it impossible to do so. Folds of mucous membrane had projected into the fenestra, and thus locked it up in the bladder; they were disengaged by the finger passed up through the fistula. The two long openings were then closed and several round ones made. They were larger than in ordinary catheters, on account of the abundant tenacious secretion before alluded to.

I operated on a case, and applied what I then supposed to be a faultless instrument. Everything progressed well for five or six days, the catheter remaining in the bladder intact for that length of time; but now it became necessary to remove it for the purpose of cleaning out the mucus and urinary concretions that were obstructing the free egress of the water. But here I was foiled. I could pull it down for, perhaps, an inch, when it suddenly stopped; then, by letting it go, it would slip back into the bladder with a sort of jerk. It evidently seemed to be fastened there by some means that I could not exactly comprehend. Every reasonable effort to remove it proving abortive, I, at last, pulled it out by main force. On its removal, the secret of its retention was explained by the shreds of mucous membrane (some an inch long) hanging from each orifice on the under and lateral surfaces of the catheter. The long-continued presence of an instrument in the urethra, which was entirely too large for it, irritated and inflamed the lining membrane, and caused it to throw out granulations. These, with the granulations of the fistula, shot little granules through the holes in the catheter, which spread out into button-shaped knobs on its inner surface, thereby preventing its removal. The injury done to the part, and the pain inflicted on the patient, may very well be imagined.

This instrument was variously modified (always keeping in view the self-retaining principle); but it was not reduced to its present simple form until about three years after this. I will not detain the reader longer with a statement of the troubles and disappointments that were encountered before I got it perfected, particularly as it will be necessary in giving the history of individual cases to speak of these amongst the causes of failure in some of the operations.

The urethra in some women is less than an inch long, while in others it may be an inch and a half; besides, it may be so small in some, that a No. 5 catheter is as large as can be borne with any degree of comfort, while others will take a No. 9 or 10, and retain it easier than one smaller. Thus, it is evident, that almost every case may require its own catheter, peculiar in length, diameter, and curvature.

Fig. 7.

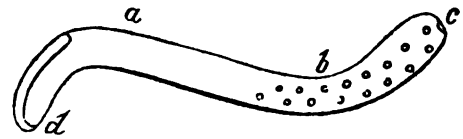


Fig. 7 is a correct representation of the self-retaining catheter, and exactly of the size and shape that is most generally required. It may sometimes be curved a little more. The end *c* is introduced and lodged up behind the symphysis pubis; the part from *a* to *b* lies in the urethra; while the outer extremity *d*, hangs down immediately below the meatus urinarius; this downward projection at *d* serves the double purpose of preventing it from slipping into the bladder, and of preserving its parallelism. If this part is too straight, running in the direction of the axis of the main channel from *a* to *b*, the instrument, after a few hours' use, will revolve on its own axis, and the end *c* may be turned to one side, or even so far round as to impinge on the fistulous opening. Should this accident happen, the instrument is not well suited to the case. It is either too long, too short, too crooked; or, what is more likely, not curved down enough below the meatus.

When well fitted to the case, it can be worn with great ease to the patient, and never turns, nor slips out; it matters not whether she lies on the back or side. It is perfectly self-retaining, being held in the bladder by an internal pressure against the symphysis pubis, and by an external pressure on the outer end exerted by the labia overlapping it, and hiding it entirely from view. The holes should be small, about as represented in the drawing.

Thus, I have, as briefly as possible, described the mechanical apparatus absolutely necessary for the successful treatment of vesico-vaginal fistula.

Of the after-treatment.—The operation finished, the patient is placed in bed, and the catheter introduced into the bladder. A moment will suffice to show the urine leaking from its outer extremity.

A large anodyne should now be given, such as morphia, laudanum, paregoric, or whatever we may know will best agree with the patient. The bowels are to be kept perfectly quiescent, till the success or failure of the operation is ascertained. I have often kept them locked up for three and four weeks without any bad consequences whatever to the general system. In but two instances, that I recollect, have I ever permitted them to be opened under ten or fifteen days from the time of the operation. This is very easily done. Previously to the operation some slight laxative medicine must be given; after it, the diet must be of a constipating character. I generally direct my patients to live on tea and crackers, allowing coffee if preferred, and prohibiting meats, fruits, saccharine substances, and all articles of food made of Indian, or common corn meal. Formerly I allowed as little water as possible; but latterly, since the introduction of silver sutures, and the perfection of the catheter, I have not thought its interdiction necessary. To assist the diet in producing constipation, I order some form of opium in as large doses as can be borne, at least twice in the twenty-four hours. Old fistula cases are generally used to opium; and where they are not, they soon learn its beneficial effects. It calms the nerves, inspires hope, relieves the scalding of the urine, prevents a craving for food, produces constipation, subdues inflammatory action, and assists the patient, doomed to a fortnight's horizontal position, to pass the time with pleasant dreams, and delightful sensations, instead of painful forebodings, and intolerable sufferings.

There is not the least necessity for the patient's assuming the erect posture, even for a moment; thus, by diet, opiates, and quietude, a perfect state of constipation can be kept up as long as we could possibly want it in any case. All this facilitates the healing process, which is effected by the "first intention;" or, if it fail, it does so only at one or two points, which may be subsequently closed.

The catheter is to be removed as often as necessary to keep it clear of concretions and mucus, which, in a few cases, may be twice a day; in some, once;

while in others, it may be allowed to remain two or three days, or even longer. It is to be carefully watched, and must not be permitted to remain long enough to become obstructed. I have seen a failure result from a neglect of this precaution.

The patient's comfort is greatly promoted, by washing the vulval opening twice a day, or oftener, with warm or cold water, as may be preferred.

For this purpose a common bed-pan is placed under the nates, as she lies on the back; when the water may be thrown into the os externum, over the mons, vulva, and inguinal regions, by means of a syringe holding some six or eight ounces. The water has sometimes to be thrown with considerable force to remove the urinary deposits from the nates and genitals.

The patient may lie on the back, or on either side, changing her position whenever she pleases; but in no instance is she allowed to raise herself up in bed.

Some women are more cleanly than others in protecting themselves and clothing from the urine. Most of them prefer old clothes to absorb it, which are changed as frequently as necessary for comfort.

On the third or fourth day after the operation, I usually examine the sutures to see if all is right. This must be done with as little exertion on the part of the patient as possible. On the sixth or seventh, I examine them again, and if they are doing no mischief, it is much better not to remove them till the ninth or tenth day. The removal of the clamps is occasionally troublesome, but by a little care it can be done with sufficient ease to both patient and operator. The flattened shots are first clipped off, then by a blunt hook, the anterior clamp is readily elevated from its bed and removed; after which the posterior one, with the wires attached, may be hooked up, pushed backwards, disengaged entirely, and then lifted out with the forceps.

This accomplished, place the patient in bed again, and continue the use of the catheter, with the recumbent position, for several days longer, to prevent any strain or traction on the delicate new cicatrix.

By allowing the patient to get up too soon, and evacuate the contents of the bladder spontaneously, there is danger of rupturing the cicatrix, but by persevering with the catheter and position, till it has time to become well organized, there is no danger. This will take usually fifteen days from the performance of the operation.

In other parts of the body, most surgeons have witnessed the sudden disruption or gradual yielding of a freshly cicatrized wound, which had been submitted to undue motion, or too strong distension. A case of this kind recently occurred in my practice. A negro woman, aged 27, had a small tumour on the dorsal aspect of the right thumb, involving the skin. It was removed by two transverse elliptical incisions; the edges of the wound were brought together and dressed with collodion, while the thumb was bandaged to a straight splint to prevent any motion in the joint or traction in the cicatrizing wound. It healed by the first intention; the dressings were removed on the seventh day, but the splint was continued on the palmar aspect of the thumb for seven days longer. It was then laid aside, as I supposed the cicatrix to be strong enough to resist the flexure of the thumb. Everything went on well for three or four days longer, when the patient, who was a cook, suddenly lifting a boiling pot from the fire, was alarmed by the snapping asunder of the cicatrix on the back of the thumb, which made a noise so loud as to be heard all over the room. The cicatrix had burst open through its whole extent; the blood flowed freely and the woman was greatly frightened. It was dressed precisely as before; it healed up as kindly; and by preserving the same precautions for a longer time, the cicatrix remained permanently organized, the skin in the neighbourhood yielding, and accommodating itself to the motions of the thumb as perfectly as it ever did before any loss of tissue. If such an accident as this can occur after eighteen days of cicatrizing, we need not be surprised at the gradual or sudden yielding of a cicatrix in the vagino-vesical structure in a shorter space of time.

I have now completed what I have to say in a general way on the subject of the operation for vesico-vaginal fistula. It remains to detail individual cases, which will prove the curability of the disease, and also illustrate the varieties and complications to which it may be liable. The cases that occurred to me early, and

which were given to me for the sake of experiment, will show the difficulties that had to be overcome, the many disappointments that had to be borne, and the ultimate success that crowned my efforts after the perfection of the mechanical contrivances; which, as it will be seen, was the work not of a day, and the result, not of accident, but of long, laborious, and persevering application.—*American Journal of Med. Sciences, Jan.* 1852, *p.* 59.

SYPHILITIC DISEASES.

106.—ON THE TREATMENT OF SYPHILIS.

By Professor Bennett, Edinburgh.

[The following remarks are taken from No. 8 of Dr. Bennett's very valuable Clini cal Lectures:—]

The treatment of syphilis may be said to be of two kinds,—namely, the simple and the mercurial. The profession are rapidly deciding in favour of the first, although some of its members still give mercury in inveterate cases. Many of those we meet with, therefore, have taken the drug, and we have to eradicate the effects of the mineral poison as well as that of the original disease.

The Simple Treatment is divided into internal or medical, and external or surgical. The first consists in the observation of certain hygienic rules, and the employment of general therapeutic means. The diet must be light and mild, meat and all stimulating viands retarding the cure; even with the lightest diet the hunger should never be quite appeased. The regimen must be the more diminished and rigid in proportion to the youth and vigour of the patient. Diluent beverages, decoctions of barley, liquorice, and linseed, alone or mixed with milk, should be taken freely, to the amount, indeed, of several pints a day. Perfect repose must be secured by confinement to bed. Constipation must be obviated by the use of emollient clysters or mild laxatives. The air should be maintained at the same temperature; this is an indispensable precaution in chronic, consecutive, and mercurial affections. Exercise is only useful in the convalescent stage. In chronic syphilis, however, it may often be carried to fatigue with advantage. Tepid baths, repeated three or four times a day, are always attended with advantage. General blood-letting is often required where the primary disease is intense, or the system excited and the patient plethoric, but should not be used indiscriminately.

In the external or surgical treatment, strict attention to cleanliness and the position of the diseased parts should never be lost sight of. Emollient decoctions or fomentations, or dressings of simple cerate, are the best applications, and the dressings should not be too frequently renewed. Leeches are generally necessary. The greatest benefit is derived from the external use of a concentrated solution of opium (in the proportion of about two drachms to one ounce of water); it soothes excessive irritability in all cases. When the suppuration is moderated and the surface of the ulcer cleansed, stimulating dressings, consisting of solutions of the sulphates of alum and copper, the nitrate of silver, and subacetate of lead, favour cicatrization.

In inveterate cases, more especially those labouring under tertiary symptoms, the iodide of potassium was introduced by Dr. Wallace, of Dublin, and used by him with considerable success. I have myself given it in numerous cases with benefit, in doses of five grains, three times a day, conjoined with emollient applications to the affected parts.

The Mercurial Treatment consists in keeping up slight salivation, by means of the internal administration of blue pills or some form of mercury, sometimes conjoined with mercurial frictions or fumigations, at least for the space of a month. This physiological action of the drug may be produced by administering any of its preparations continuously in small doses. If combined with opium, they act less on the bowels and more on the system generally.

It is necessary during its action, that the patient do not expose himself to cold. A certain irritability is produced, and the constant soreness of the gums, the metallic taste in the mouth, not to speak of the inconveniences of profuse

salivation which occasionally occur, render this species of treatment anything but agreeable to the patient.

Both kinds of treatment have now been extensively tested. In the year 1822, the Royal Council of Health, in Sweden, having been charged by the king to conduct a series of experiments upon the different modes of treating venereal diseases, reports from all the civil and military hospitals were ordered to be drawn up annually. These reports establish the inconveniences of the mercurial system, and the superior advantages of simple treatment. In the various hospitals of Sweden, 40,000 cases have been under treatment, one half by the simple method, the remaining half by mercury; the proportion of relapses have been in the first instance, seven and a half, in the second, thirteen and two-thirds, in one hundred. Dr. Fricke's experiments in the Hamburgh general hospital were first made public in 1828. In four years, out of 1649 patients of both sexes, 582 were treated by a mild mercurial course, and 1067 without mercury, the mean duration of the latter method has been fifty-one days, and that by mercury eighty-five. He found that relapses were more frequent, and secondary syphilis more severe, when mercury had been given. When the non-mercurial treatment was followed, they rarely occurred, and were more simple and mild when met with. He tells us that he has treated more than 5000 patients without mercury, and has still to seek cases in which that remedy may be advantageously employed. He has never observed caries, loss of the hair, or pains in the bones, follow his treatment, and in all such cases which have come under his care, much mercury has been given.

In 1833, the French Council of Health published the reports sent in by the physicians and surgeons attached to regiments and military hospitals in various parts of France. Some of the reports are in favour of a mild mercurial course, others in favour of simple treatment. They all agree by stating the cure by mercury to be one-third longer than by the other treatment. At Strasburg, mercury was only given to very obstinate cases. Between 1831 and 1834, 5271 patients had been thus treated, and the number of relapses and secondary affections calling for the employment of mercury had been very small. No case of caries, and only one or two instances of exostosis, had been observed. Full reliance may be placed on these facts, as regiments remain in garrison at Strasburg for five or six years.

In the various reports now published, more than 80,000 cases have been submitted to experiment, by means of which it has been perfectly established that syphilis is cured in a shorter time, and with less probability of inducing secondary syphilis, by the simple treatment.

These facts are now very generally admitted, and malignant syphilis is gradually disappearing. Twenty years ago, the most frightful secondary and tertiary cases were met with, and the usual treatment was profuse salivation. At present, such cases are rare. Abroad, owing to the wise police regulations, the disease is infinitely more innocent even than it is at present in Scotland; and under the salutary influence of a mild and simple treatment, its virulence is daily abating.

In appreciating the value of this important revolution in practice, we should not forget to eulogize those who had first the boldness to introduce it. The credit of this is mainly due, in England, to Mr. Fergusson, and other British army surgeons, who practised it during the Peninsular campaign ('Medico-Chir. Trans.,' vol. iv.), and to Mr. Rose, of the Coldstream Guards (Ibid. vol. viii.) In Scotland, the writings and lectures of the late Professor John Thompson, of this university, were mainly instrumental in convincing Scotch practitioners of the evils of mercury in venereal diseases. In England, the Hunterian theory and practice have been deeply rooted, and in Ireland have been supported by the writings of Carmichael and Colles. Mercury in consequence is still very generally employed in those parts of the kingdom. The gigantic experiments made abroad, however, ought to convince the most sceptical; if not, let them compare what syphilis is in Scotland with what it was, and especially observe that we never see an instance of the disease such as that now in the ward (Case 1), unless the patient's system has been contaminated with mercury.—*Lancet, July 24, 1852, p. 85.*

one knows, that remedies possessing any real influence over gonorrhœa are most efficacious in cases of recent infection.

I confess to a prejudice against this sort of thing; that I am rather disposed to become a convert to Mr. Milton's opinion, that almost every case of gonorrhœa is curable by very simple means, and that the most refractory gives way with a little patience, and without torturing the patient. Analogy, and what is more successful, trial, would lead me to believe, that his plan of lessening the discharge by internal means, and applying the injection to the whole instead of a portion of the diseased surface, is likely to do more good, and less mischief, than an injection which drives the patient almost frantic with pain.

As an interlude, the 'Lancet,' of July 17, contains a letter on "Injections of Chloride of Lime." Before this gentleman sends in the rest of his cases, it might be as well if he would look through the German Journals, where he might chance to see that it has already been tried and failed.

As argument and ridicule seem alike incapable of arresting this influx of novelties, we may expect to hear of the cure of gonorrhœa by injections of sulphuric acid, or the introduction of a hot wire down the urethra; this would, doubtless, have the effect of checking the gonorrhœa, as well as of incapacitating the patient from contracting any fresh attack.—*Med. Times and Gazette, Aug.* 21, 1852, *p.* 197.

109.—CASES OF GONORRHŒA TREATED BY M. JOZEAU'S COPAHINE-MEGE;

(A PECULIAR MODE OF ADMINISTERING COPAIBA.)

Under the care of Messrs. LLOYD and POLAND.

[M. Jozeau deserves great praise for the frankness with which he has stated the different ingredients contained in these capsules, and the way in which they are treated and prepared.]

The peculiarity of M. Jozeau's saccharated capsules was stated to be that they were easy and agreeable to take, that they produced no nausea, sickness, or unpleasant purging, and that, when continued for a sufficient period, they cured gonorrhœa in a short time. Considering the insuperable dislike of some patients for copaiba, these, if verified by experience, are certainly most valuable improvements.

The following is the account given by M. Jozeau of the preparation of the Copahine-Mège, and the pathological facts which led to the peculiar manner of preparing this remedial agent:—

It was noticed that such patients as were purged by the copaiba evacuated per anum large quantities of this drug in an unaltered state, their urine not containing any of it. These persons, though sometimes cured, generally had a relapse. Those, however, who were not purged became well more slowly, and had no recurrence of the disease; their stools contained no copaiba, and their urine a great deal. From these facts it became evident that in order to obtain regular and speedy effects, the copaiba should be made to undergo such modifications as to insure its more complete absorption into the system. Experiments were now instituted respecting the effects of the two principal substances contained in the copaiba—viz., the oil and the resin. These were separately tried. The oil produced a decidedly purgative effect; the resin purged less; but no complete cure was obtained by either substance taken separately.

It was now pretty clear that both the resin and essential oil were indispensable for obtaining curative effects, and the question arose how these could be modified so as to allow the stomach to digest them completely. This end was attained in surcharging the copaiba with oxygen, by means of nitric acid, the latter being added in proportions which varied according to the kind of copaiba acted upon. The nitric acid yields some of its oxygen to the essential oil, and the nitrogen is given off in the form of hyponitrous acid, by combining with the oxygen of the atmosphere. The copaiba thus treated is then well washed with water, until it no longer reddens litmus paper, and to it are added one tenth part of cubebs in fine powder, the same proportion of carbonate of soda, and one sixteenth part of

calcined magnesia. The mixture is allowed to stand until it is quite solidified, and in that state it is made into small masses. The latter are then carefully covered with sugar, to which a pleasant pink colour (coccus cacti) is given, and they then look like very pretty sugar-plums.

To these saccharated capsules the name of Copahine Mège was given, because the experiments had been made conjointly by M. Jozeau and M. Mège, and the latter had first thought of making the saccharated capsules. For lymphatic patients and delicate females a second mass was prepared, into which, besides the above-mentioned ingredients, some steel was made to enter. This is then a sort of martial preparation of copaiba. The doses are stated as follows:—

When there is neither pain nor inflammation, five saccharated capsules are taken three times per diem. One capsule more is then given with each dose every subsequent day, the doses being thus increased until purging is produced. Where there is pain or inflammation, these should first be treated by the surgeon in the manner he thinks the most advisable, and the copahine is to be commenced when acute symptoms have abated. It has been noticed that the martial capsules have effected a cure when the simple preparation has failed.

Such being the explanations given by M. Jozeau, several hospital surgeons agreed to give the capsules a trial, but this proved somewhat difficult, as far as public practice is concerned, since persons affected with gonorrhœa are not in general admitted as in-patients into these institutions. It was, moreover, evident that upon out-patients the effects could not be so conveniently watched, and the value of the remedial agent ascertained. It might also be feared that the form given to the remedy, being extremely elegant and new, out-patients of hospitals might probably not sufficiently appreciate the importance of the capsules. Still it would appear that M. Jozeau was anxious to obtain the approval of the surgeons of this metropolis, as the preparation had already been pronounced as extremely valuable by the Academy of Medicine of Paris, upon a report of Messrs. Boulay, Bégin, and the former surgeon of the Venereal Hospital, M. Cullérier. We here subjoin some of the results obtained.

[The following case occurred at St. Bartholomew's, under Mr. Lloyd:]

Case 1. John B., aged 28, has had gonorrhœa four days, and has not tried any remedies. He commenced taking the capsules October 17th, 1851, the dose being five of these thrice a day. Six days afterwards, there was no improvement; bowels open regularly twice a day; no nausea, but slight scalding in passing urine. Take six capsules three times a day. Two days after this increase of the dose, the patient was found better; the discharge had considerably lessened, the scalding had ceased, and the bowels were opened three or four times daily. No nausea; take seven capsules three times a day.

October 30th, thirteen days after the commencement of the treatment, the discharge had nearly ceased. Bowels open four times a day. Take twenty-four capsules per diem. Five days after this, the discharge had entirely disappeared. On Nov. 9th, being four days after the complete cessation of the discharge, the latter slightly recurred. The capsules were resumed, and in four days no appearance of the affection was left.

Case 2. Edward L., aged eighteen. Gonorrhœa three days; a small sore on the prepuce. Commenced taking five capsules three times a day, on October 17th, 1851, and continued using them for six days, when he was taking twenty-one per diem. The patient was soon purged three times a day, and the bowels continued freely open several times daily, until the eighth day of the treatment, when the discharge ceased. There was no nausea during the use of the capsules.

Case 3. Sarah A., aged 20, has been affected with gonorrhœa for one week. She began to take five capsules three times daily, on the 17th Oct., 1851, and continued them for four days, increasing the dose to twenty-four per diem, when the discharge entirely ceased. On Nov. 10th she left the hospital quite cured. After using the capsules for two or three days, the bowels were freely acted upon, but no nausea or sickness ever occurred during their use.

[The next cases were under Mr. Poland, of Guy's Hospital.]

Case 1. A. B.; gonorrhœa for the first time; duration three weeks; inflammatory symptoms subsiding. Patient took the capsules for sixteen days, increasing from five, three times a day, to eight, and became completely well.

Case 2. W. H.; gonorrhœa for the third time; discharge profuse. Took the capsules for four days, and left off from a dislike to the mode of taking the drug, as he allowed the sugar to melt away too completely before swallowing, and therefore experienced the unpleasant taste of the copaiba in the mouth.

Case 3. Male patient; gonorrhœa three weeks. Took the capsules for a week, without any trouble; but having slightly improved, he did not present himself again.

Case 4. W. B.; gonorrhœa for the second time; copious discharge, which had lasted ten weeks. Took the capsules with a little inconvenience, increasing from five to ten three times daily. The drug acted very well, there was slight purging, and the discharge was checked. In this patient the capsules were not continued long enough after the discharge had ceased, for it returned to a certain extent.

Case 5. Male patient; gonorrhœa second time; copious discharge. Took the capsules, from five to twelve, three times daily, for eight days, without any effect, and did not continue them. It should be noticed that no injections were used in any of the foregoing cases.—*Lancet, November* 6, 1852, *p.* 423.

110.—*On the Employment of Aluminized Bougies.* By M. JOBERT.—When the stricture is combined with chronic inflammation, M. Jobert finds a preliminary treatment by means of *aluminized bougies* of great service is procuring *dégorgement* of the mucous membrane,—the alum not acting as a caustic substance, but producing a modifying influence similar to that induced by nitrate of silver in ocular inflammations. He warms the end of a wax bougie, and then incorporates with it some powdered alum, so as to form a kind of magma of the wax and alum. If the latter were lying at the surface of the bougie, it might induce ulceration in place of mere modification of the mucous surface, and the inodular tissue left by this, on healing, would only aggravate the patient's condition. When the *dégorgement* is accomplished—usually in from seven to twelve days—the dilation of the stricture is proceeded with.—*L'Union Médicale; Médico-Chirurgical Review, Oct.* 1852, *p.* 544.

DISEASES OF THE SKIN.

111.—ON THE PRESENT METHOD OF TREATING DISEASES OF THE SKIN.

By J. S. TYLOR, Esq.

[In the first of the following cases of lepra, the patient, Emma Collinson, aged 12, was first attacked with the disease six years ago, beginning upon her knees and extending to the lower parts of her legs. At present (Sept. 5, 1851,) firmly adherent patches of lepra are scattered over nearly the whole of the loins, back, and abdomen.]

Treatment.—Meat was allowed once a day; but a milk and farinaceous diet was chiefly enjoined. Thin oatmeal gruel was directed to be used instead of soup. Malt liquors were forbidden. An alkaline bath was ordered once a week. Half grain doses of the iodide of potassium, combined with three minims of Fowler's solution, were given three times a-day; and an ointment, composed of the nitric oxide of mercury and lard, with a few drops of creasote, was to be applied night and morning to the parts affected. She persevered in the use of these measures for six weeks; and it was very interesting to observe, from time to time, the gradual detachment of the larger and thicker leprous scales, and the healing of the patches from the centre outwards.

Discharged cured, October 17, 1851.

Case 2. *Lepra Vulgaris.*—George Totz, a German, aged 50, Old St. Pickford-square, admitted June 18, 1851. Is a skin-dresser by trade, and much exposed to dirt, and contact with certain chemical substances. Has been affected with lepra for fifteen years. Up to the age of thirty-five, he was robust and healthy. At this time, he was attacked by a scaly eruption which first came on his left elbow,

and his health began to decline. He is now weakly, though suffering from no specific complaint but that of the skin. The pruritus is at times extreme, and distresses him greatly. Has been a patient at several hospitals and dispensaries. Irregular patches of lepra are scattered over nearly the whole of this patient's body. The shin bones and arms are also occupied by orbicular patches and spots, slightly depressed in the centre, and many of them are covered with white shining imbricated scales. Some of the patches are inflamed and indurated, and some irregular in shape resembling those of psoriasis. The knees and elbows are coated with thick, closely-adherent scales, of a dirty white colour. Diet, &c., the same as in the last case.

Treatment.—An alkaline bath. Iodide of potassium, with a few minims of Fowler's solution; and creasote ointment.

This patient was discharged cured, October 8, 1851, with his general health much improved.

Case 3. *Lepra Vulgaris.*—Anna Campkin, aged 9, Perry-street, Chiselhurst, Kent, admitted March 17, 1851. A stout, fresh-looking girl, in good general health. She first observed small squamous spots on her arms and legs two years ago. Her father was affected with a scaly disease for some years before she was born. Large circular patches of lepra are symmetrically placed upon the neck, body, and legs. The largest, from two to three inches in diameter, are situated upon the hips, and below the patellæ. The arms and elbows are free from disease: a few spots are developed on the scalp. The disease produces no constitutional disturbance. The itching only troublesome when warm in bed. The complaint gradually increases, but does not vary with the seasons of the year. Rules given with respect to diet, &c. Alkaline bath as usual.

Treatment.—Doses of one-twelfth of a grain of bichloride of mercury, with a few drops of laudanum, three times a-day. An ointment, containing a small quantity of both the nitric oxide and the ammonio-chloride of mercury, to be applied night and morning. On the 7th of April, Fowler's solution was added to the medicine, and creasote ointment was substituted for the mercurial.

On the 30th of April, as she did not make rapid progress, the iodide of potassium, with liq. arsenicalis, was prescribed, which was persisted in till she got well.

June 20—Quite well. Skin everywhere perfectly clear and sound. This patient did not leave the hospital till the 28th of August, during which time she experienced no relapse, and took no medicine.

Case 4. *Lepra Vulgaris.*—Elizabeth Maunder, aged 22, unmarried, Blue Anchor-road, Bermondsey, admitted December 20, 1850; a healthy young woman. Six years ago a few red spots appeared on both elbows at the same time, which shortly became covered with white filmy scales. Parents both healthy; neither has ever suffered from any cutaneous disease. She can assign no cause for the attack. Over some parts of this patient's body the spots represented the appearance of lepra alphos, being small, raised, and coated with very white scales. On the limbs the patches are of considerable size, mostly depressed in the centre, and covered with shining metallic-looking scales. The parts chiefly affected are the fore-arms and the legs from the knees to the ankles. Diet and bath as usual.

Treatment.—Half-grain doses of the iodide of iron, with Fowler's solution, and the creasote ointment; but as the arsenic, even in very small doses, disagreed with the stomach, the bi-chloride of mercury was prescribed on the 3rd of January, with a few drops of the tinctures of opium and cantharides. This patient disliked medicine, and not being an inmate of the hospital, neglected to take it for more than six months. But, as during the summer her complaint became much increased, she a second time applied for relief. The mixture last prescribed was again ordered, with the occasional addition of a few drops of Fowler's solution, as she was able to bear it.

She was discharged cured, Oct. 27, 1851.

Case 5. *Lepra Alphoides.*—Anne Fitch, unmarried, aged 28, 48 Spencer-street, St. George's-in-the-East, admitted October 3, 1851, a stout, healthy-looking woman. At the age of 15, during menstruation, she bathed in the sea. The catamenia were immediately arrested, and, shortly afterwards, spots of lepra appeared on the breast bone. She suffers much from dysmenorrhea, but otherwise enjoys good health. Her head, face, arms, and elbows are sprinkled with small

scaly and elevated spots. The knees and the backs of the hands are also covered with spots of a larger size, coated with very white friable scales. She states that the loins and abdomen are similarly affected. These spots are visibly raised and mostly circular. She has undergone much medical treatment. Rules with regard to diet, the use of soap, &c., as before. An alkaline bath as usual.

Treatment.—The iodide of potassium, with Fowler's solution and the creasote ointment.

Nov. 7.—Well, except that her arms look red, and are somewhat irritated, from her having been occupied the whole of the previous day in washing with soap and soda. Discharged cured.

In three cases of lepra out of the five, the disease seemed neither to be hereditary nor to have arisen from any specific cause. In one it was probably inherited, and in another occasioned by suppressed menstruation. In one case it had existed for two years, in two cases for six years, in one for thirteen, while, in another, it had lasted for the long period of fifteen years. In the case of Elizabeth Maunder, the cure was not accomplished for ten months; but this is to be accounted for by the patient suffering a long interval to elapse without taking any medicine. Upon resuming it she soon recovered. Four months was the longest time during which any other patient was under treatment. All the patients took a combination of the iodide of potassium and arsenic. With one this remedy did not agree, and she recovered under a course of bichloride of mercury. It will be seen, that, where powerful medicines were exhibited, very small doses were invariably given, and were found to be efficacious; and, far as I am from any leaning towards homœopathic humbug, I feel certain that this is a point very important to observe, both as least interfering with the general health, and as most effective in the cure of these as well as of many other chronic diseases. Where Fowler's solution is administered in drachm or half-drachm doses, several instances of which have lately come under my notice, I am sure that it is neither so safe nor so efficient a remedy as when given in doses of from two to five minims; and, while it is evident that arsenic is a most valuable medicine in the treatment of many cutaneous dieases, it is, I believe, a great mistake to suppose, as some practitioners manifestly do, that this drug is a specific for all. With regard to external remedies in squamous disease, the alkaline bath has been proved to be of essential service, though the constant use of soap is certainly irritating and injurious. The old practice of using tar still obtains under the concentrated form of creasote; and this as a local remedy may be readily employed through the medium of unguents and liniments. But while outward applications will alleviate some of the more distressing symptoms, very little will certainly be done towards obtaining a radical cure without attacking the root of the disease, which, with the exception of a few complaints dependent upon external exciting causes, has its seat in the blood. After all, medicaments of every kind must be employed, with special reference to the peculiar constitution of the patient as well as to the general state of his health; and strict attention to diet, change of air, &c., are as important aids to recovery in these as in all other diseases.—*Med. Times and Gazette, Aug.* 7, 1852, *p.* 138.

112.—ON THE APPLICATION OF GUTTA PERCHA IN THE TREATMENT OF DISEASES OF THE SKIN.

By Dr. Robert J. Graves, F.R.S.

[When any abrasion of the surface of the body takes place, nature immediately sets to work to provide some impermeable covering for the protection of the delicate tissues from the action of external influences. This was the idea which led Dr. Graves to introduce a solution of gutta percha in chloroform, for the same purpose in various diseases of the skin. The advantage of this preparation over collodion is, that it is not liable to crack and peel off; but being more tough and extensible, it more nearly resembles the natural covering. The effect, he says, has been most favourable in the cases in which it has been tried, diminishing inflammation and aiding the restoration of the healthy structure of the skin. Dr. Graves says:]

Whether it acts by the equable pressure which the film of gutta percha, suddenly coagulated from the fluid state, must exert on the surface to which it becomes so firmly adherent, or whether its efficacy be rather owing to other causes, it is beside my object in writing this notice to discuss. I may, however, remark, that the curative properties of such an artificial covering are not confined to the skin, for I am informed by Mr. Moore, that in the 'Gazette Medicale de Paris' (April 10, 1852) is an account of the successful application, by M. Dechange, of collodion in orchitis, and the *modus operandi* is said by him to consist in its compressing the tissues, and protecting the parts from the action of the air which he thinks is a powerful element of phlegmasia. Without giving an unqualified assent to this explanation, I can have no hesitation in announcing my firm conviction that in diseases of the skin, this solution furnishes us with a new and active remedy, exerting effects quite different from those produced by any topical application hitherto in use.

The transparency of this artificial membrane enables us to watch the progress of the subjacent diseased skin, and its colourless nature prevents it from disfiguring the face when the eruption occupies that part. Its perfect cleanliness, too, is no small advantage, and affords a very agreeable contrast when compared with the usual ointments, &c.

My observations confirm what reasoning on this subject would lead us to expect, that this application is more suited for dry, scaly, tubercular, and chronic diseases of the skin, than for acute affections attended with much oozing of fluid and comparatively active inflammation.

Still, its good effects are by no means limited to chronic diseases of the skin, or to those of a scaly, dry nature; for, as will hereafter appear, I have seen it decidedly useful in the spreading form of impetigo. My experience of this remedy makes me very anxious to witness its application in the first stages of erysipelas, as analogy leads me to hope for good results in such cases.

Of course the patient must aid the efforts of the physician, and must, as far as possible, abstain from everything which tends to rub off or injure the artificial cuticle, for its virtue ceases when its continuity is broken, and the external air finds admission to any part of the diseased surface.

[Early in the month of November, 1851, Mr. Graves saw a lady, aged 50, who was affected with impetigo: this had increased to such an extent, that some of the spots or patches were larger than the hand.]

The itching at night is intolerable, and nearly deprives her altogether of sleep. I employed the usual general and topical treatment for a fortnight without alleviation of her sufferings, when luckily I thought of trying the saturated solution of gutta percha in chloroform, and had it carefully applied by Mr. Nicholls, of Dawson street, at first by way of trial, to one of the smaller spots, and on the following days to each of the larger patches of eruption in succession. The relief obtained was such that it appeared almost incredible both to the patient and her family. Her cure was accomplished in less than three weeks; for, dreading the sudden stopping of so great a discharge and so much cutaneous irritation, I proceeded cautiously, and towards the end of the cure, when she returned home, I directed an issue to be inserted in her arm, as a measure of precaution. She has continued well up to the present time (11th April, 1852).

In this patient we were at first obliged to re-apply the gutta percha every second day, as it was rapidly detached and broken up into large flakes by the discharge from the subjacent surface. Its healing influence, however, speedily diminished the diseased secretion, and then the artificial cuticle remained longer adherent, and it was not necessary so often to use the scissors for the purpose of cutting off the loose portions of gutta percha membrane previously to applying a fresh layer. I ought to have remarked that the camel's-hair brush should be plunged, the moment it has been used, into hot water, to prevent it from being consolidated by the coagulated gutta percha.

This case caused a great sensation among my patient's friends and relatives, and many were the inquiries made relative to my method of cure. I must confess that my own astonishment at the result was not less than theirs.

Since that time I have repeatedly used this application in *acne of the face*, in

which disease each of the pimples should be covered with the solution, and the patient enjoined not to rub off the pellicle by washing, &c.

In some, this treatment alone causes a material and rapid diminution of this tormenting eruption, and by perseverance in this plan, there is every appearance in two of my patients that the tendency to throw out the pimples is gradually ceasing.

Finally, in several cases of *psoriasis* I have applied the solution with great benefit. In this disease much care must be taken to prevent the application being rubbed off by the clothes, and no woollen stockings or rough garment of any sort should be allowed next the skin. I had the satisfaction of curing in a fortnight a chronic psoriasis of the back of the hands and arms in a lady who had been under homœopathic treatment for six months without deriving the least advantage from the infinitesimal doses prescribed by the practitioner.

Since the preceding observations were written, I have received the following note from Mr. Moore, a gentleman distinguished alike for his practical, scientific, and literary attainments. This additional information concerning the effects produced by the application of collodion, strongly verifies my observations respecting the local antiphlogistic action of a gutta percha pellicle. .

"M. La Tour has for some time advocated the doctrine that external inflammation may be speedily subdued by withdrawing the affected surface from the influence of the air. This he effects simply by a layer of collodion, which, he says, rapidly assuages the inflammation of gout and articular rheumatism. At the meeting of the Academy of Medicine, on the 8th of February, M. La Tour related a case of peritonitis in which the symptoms were dissipated within twenty-four hours, by the application of a layer of collodion to the whole surface of the abdomen."

[Dr. Neligan, in his Treatise on Diseases of the Skin, has justified the value of this application in *erysipelas*.

Dr. Stokes has proved its efficacy in preventing ulceration from the pustules of *small-pox*—of this disease the following case is related:—

A patient, Anne Kenny, aged 18, was attacked with small-pox, which, on the 6th of May, 1852, gradually assumed typhoid symptoms. At this stage she was ordered wine and carbonate of ammonia mixture, and her face to be painted with a solution of gutta percha in chloroform:]

The solution was applied with a soft brush; the entire face being well coated with it, and after an interval of a few minutes (just sufficient to allow the previous coating to dry), a second coat of the solution was applied.*

This application, she said, gave her great relief, and allayed the pain and itching. On the 13th, she was much better, and the solution was again applied in the same manner.

May 22nd. She has progressed most favourably; all the crusts have come off the face in large pieces, and there is hardly any trace of the disease remaining except a slight discoloration. During the whole time of her illness, from the application of the solution, her face continued moist, and there was no ulceration in any place.

Catherine Sherlock, aged 12, was admitted May 13th (seventh day of eruption). Her illness commenced by headach, pain in her loins, and rigours, but without sickness of the stomach; she was never vaccinated. On admission she had a good deal of fever of the typhoid type, the eruption had come out well, was confluent, and had completely covered her face; she complained very much of pain and itching of her face and head, which kept her from sleeping. The solution of gutta percha was applied as in the former case, and apparently gave her much relief, for she was easier afterwards, and ceased rubbing and tearing her face in the manner in which she had been doing before. Wine was also freely used, as in Kenny's case.

May 22nd. All trace of the disease has nearly gone, the crusts coming off in

* It is of great importance, and essential to the success of this treatment, to observe, that the *gutta percha* solution should not be applied to the face until the pustules are fully maturated, or even begin to exhibit the first appearance of collapse, as indicated by the well-known central depression on the apex: applied then, the solution is of the greatest service: *applied before maturation, it is mischievous.*

large pieces, and the remaining marks of the disease being very trifling when compared with the violence of the attack.

The same effect of the solution in keeping the face moist was also observed in this case as in the preceding.

In communicating these cases, Dr. Stokes observed, as worthy of notice, and probably connected with the beneficial result produced, that the most remarkable effect of the gutta percha was to keep the face constantly moist, and to prevent the formation of hard, irritating crusts. He also mentioned to me a singular illustration of the effects of total exclusion of air from the cutaneous surface, as a preventive of the eruption in the small pox. It was of a man who, while in the Meath Hospital for a scrofulous enlargement of the knee-joint, was attacked with this disease; the knee had been previously tightly strapped with adhesive plaster, and on the disappearance of the eruption, it was seen, on removing the strapping, that not a single pustule had been developed on the parts which were thus covered.

It is scarcely necessary to add that, however useful solutions of gutta percha in chloroform, or any other topical applications, may prove, it would be, nevertheless, absurd to expect from them a radical cure of those chronic cutaneous affections which arise from constitutional causes, whether strumous, syphilitic, or cancroid; as well might we look for the cure of scarlet fever, small-pox, or measles, by means of remedies applied to the skin solely with the view of relieving the eruption. Still, in every chronic disease it is manifestly desirable to diminish, by topical means, the annoyance or disfigurement arising from the cutaneous affection.—*Dublin Quarterly Journal of Med. Science, August*, 1852, *p.* 1.

[Dr. Graves, in concluding his article, remarks that the solution of gutta percha is most valuable in psoriasis in checking the growth of any new spot, seeming to smother as it were each nascent centre of future blotches.]

113.—*Cure of Nævus by Subcutaneous Elastic Strangulation.* By James Startin, Esq.—[The following plan for the cure of nævus is given by Mr. Startin in a letter to the Editor of the 'Medical Times and Gazette.']

It consists in environing the nævus or tumour with a ligature passed by means of a long round needle beneath the skin, so as to include the morbid parts in a triangular space which shall extend a line or so beyond the boundaries of the nævus, care being taken, that both ends of the threads (made of strong boot-maker's twist) have their exit at that apex of the triangle which is most conveniently situated to allow an elastic band, half an inch wide and two or three inches long, made of No. 16 vulcanised India rubber sheeting, to be fastened upon them, so as to permit the necessary tension to be made upon the band, and, through it, upon the subcutaneous thread surrounding the nævus.

There are two methods of operating by elastic strangulation:—The first, is to fix the elastic band upon the ends of the ligature half-an-inch from their exit, after being passed round the nævus, without previously tying a knot upon the tumour, as in the case of the ordinary subcutaneous ligature.

The second method, is to employ a subcutaneous ligature, and thus strangulate, or arrest, the circulation in the tumour, before fixing on the elastic band.

In the first method, the elastic tension of the band upon the ligature occasions the thread to ulcerate or cut its way out; and this may be accomplished in twenty-four hours, or in as many days, according to the force of the tension employed. To measure this force, I have constructed a graduated elastic band, with a small hook at one end, which, excepting the hook, is enclosed in a leathern sheath, in such a manner as to allow each division of the band, as it is drawn out by the hook, to mark the equivalent of half a pound weight. By this simple apparatus the force used can be neatly indicated and regulated at pleasure, it being borne in mind that, by a quick division of the morbid growths, we secure an abundant suppuration, which we can augment, if necessary, by iodine injections, &c.; whilst by a slow division of the parts, the healing process can be caused to go on behind the ligature, as it is drawn forward by the band.

In the second method of operation, a knot to strangulate the nævus or erectile tumour, is to be tied; after passing the thread beneath the skin and around the

nævus, before the elastic band, as above, is hooked on to produce the necessary tension for bringing away the ligature. The curative action of the tension being the same in both methods of operating; but the force should be less when the subcutaneous knot is necessary, as arteries or veins of large size will be usually implicated, and it will be prudent to avoid the chance of hæmorrhage, which much force might endanger.

The cases of nævus, or erectile tumour, in which my experience has proved the superior advantages of this operation over those in ordinary use, are examples of the complaint occurring in the face, implicating portions of the features,—of the forehead, eyelids, cheeks, or nose, for example,—where the knife or caustics are inadmissible, and also in those "blood-marks," "port-wine stains," &c., on the face or neck, where other surgical means are not possible or easily applied.—*Med. Times and Gazette, July* 3, 1852, *p.* 22.

114.—*Local Treatment in Confluent Small-Pox.* By HENRY GEORGE, Esq., Kensington.—[In this case the subject was a young lady aged 24. The constitutional symptoms ran very high, the entire appearance indicating a formidable seizure. The whole surface was directed to be covered with hair powder, and general soothing remedies were ordered. The eruption appeared on the 4th of May. On the 11th, an urgent message arrived to say that she was dying. Mr. George says:]

I found her indeed in a most precarious state, her appearance very distressing, not a feature to be recognised, the eyelids perfectly closed, and the throat enormously swollen, even as low as the clavicles, so as nearly to be on a level with the lower edge of the inferior maxillary bone; the body, also, and the arms and legs, were one mass of eruption; she was now collected when spoken to, but had been perfectly sleepless, agitated, and delirious through the night; her pulse was scarcely to be counted, felt herself sinking; the deglutition was extremely painful and difficult; the three preceding nights had been passed with little or no sleep. I ordered directly a small injection, containing one drachm of laudanum. I covered the throat with jeweller's cotton, well sprinkled with finely powdered camphor; and half an ounce of the same material was scattered over the bed, between the sheets; her diet to consist of beef-tea, gruel with brandy, &c., to be given in moderate quantities and at short intervals; the medicine ordered was ammonia, with extract and decoction of bark, and a little Battley's sedative every six hours. 11 a.m., fast asleep, breathing quietly; 4 p.m., awoke once, composed and much refreshed; took some caudle, is again asleep. 9 p.m., has taken nourishment twice; is very cheerful, and declares to feelings of perfect comfort. Cont. omnia.

12th. Slept nearly the whole night; has taken plenty of nourishment; the throat scarcely swollen; deglutition not at all painful. When I look back to her condition yesterday, I am almost surprised at the change. I renewed the camphor in the bed; continued the medicine; her diet still to be generous. 9 p.m., has slept a great deal; is desirous of food, and is perfectly free from any kind of pain. Cont. omnia.

13th. Has passed another comfortable night; makes no complaint; the medicine and diet to be continued. The camphor was renewed.

18th. Has been recovering rapidly; the hair-powder has all along been assiduously applied; all the pustules are healed; the eyes have been opened some time, and the features perfectly natural. Innumerable as the pustules are, they are all distinct. I have cleared the face of all incrustation. The bark medicine has been continued; the bowels regulated with colocinth and rhubarb pill, and the diet is now partly solid.

24th. Is convalescent; no change has been made in the plan of treatment.—*Med. Times and Gazette, July* 3, 1852, *p.* 22.

115.—ON THE USE OF COLLODION TO PREVENT PITTING OF THE FACE IN SMALL-POX.

By M. Quarrin Willemier.

This practitioner has successfully employed collodion in a case of modified small-pox, in which the pustules were confluent on the face. On the first day of the eruption he applied on the cheek a slight layer of collodion, which continued adherent until the period of desiccation. As soon as the collodion began to be detached it was removed, when the subjacent skin was found to be perfectly smooth and in its normal condition, while the surrounding portions of the integuments presented crusts and slight depressions. The patient stated that he had felt no itching where the layer of collodion had rested, while this sensation was constantly present in the neighbouring parts.

The means hitherto employed to prevent pitting from small-pox are the following:—Cauterization of the pustules with nitrate of silver, the application of Vigo's plaster (emplastrum hydrargyri cum ammoniaco) or of a constantly renewed layer of mercurial ointment. The first of these is an ectrotic plan, for the vesiculo-pustular secretion is at once discharged by it; the other two should rather be called resolutive means. If the layer of mercurial ointment be applied but for a day or two, the purulent secretion is only retarded, and will re-appear. In order with certainty to prevent its formation, the layer of ointment must be kept up until the desiccation of the last pustule on the body.

Now, if it were proved that Vigo's plaster and mercurial ointment merely acted by protecting the eruption from the contact of the air, and perhaps of the light, it would be much simpler to cover the face with diachylon, with lard, or, as the author has done, with collodion, and thus avoid the danger of salivation. But a decisive experiment has already shown that diachylon and lard are inefficacious. In 108 soldiers affected with small-pox, M. Champouillon covered the face with Vigo's plaster, while diachylon, lard, or a layer of oil was applied to the neck. Except in 11 cases, the Vigo's plaster prevented the pustular eruption, while only four patients escaped the formation of pustules on the neck.

Might a more fortunate result be expected from the use of collodion than M. Champouillon has obtained with diachylon, lard, or oil? A single fact is not sufficient to decide this question; for the means just quoted have succeeded in nearly five per cent. of the cases in which they were tried, while the almost constant efficacy of topical mercurial applications leads to the inference that the latter possess a specific action; at the same time, nothing can be easier or safer than to institute experiments with collodion similar to those of M. Champouillon.

The selection of a preventive for variolous pits may be based on the following considerations:—The cauterization of the pustules, otherwise called the ectrotic method, is little employed; the application of the caustic is a minute and difficult operation, for each vesicle must be separately opened and cauterized with a fine pencil of nitrate of silver; it is, moreover, very painful; it ought at the utmost to be confined to the pustules on the eyelids, which it is very difficult to cover accurately with Vigo's plaster. The cauterization *en masse* of the face with a concentrated solution of nitrate of silver has likewise been proposed, but it is also very painful, and is little to be recommended. The mercurial topical applications are greatly preferable to the foregoing: it is asserted that, far from producing pain, and, consequently, a swollen and dangerous state of the face, they prevent congestion of this part, and are even observed to allay existing cerebral symptoms. Lastly, the mercurial ointment is more eligible than Vigo's plaster, because the latter cannot in all instances be evenly applied to the surface, and, in the case of children, it cannot without great difficulty be kept in its place, while, with a little attention, the face can always be kept smeared with a layer of ointment. The only inconvenience of these mercurial applications is the occasional production of salivation; but this sometimes occurs spontaneously in small-pox, and the topical mercurial applications have not been found to aggravate it. A more decided inconvenience produced by the use of these local remedies is, the eruption of mercurial eczema; but even this is a mild affection, and, like salivation, not to be compared to the formidable results of confluent pustules on the face. It must in addition be observed, that it is, at least in theory, prudent to assist the coming out of the eruption on the

limbs whenever that on the face is treated ectrotically; for this purpose, warm poultices to the feet will be found useful.—*Repertorium, Tijdschrift voor de Geneeskunde; Nouvelle Encyclographie des Sciences Medicales.—Dublin Quarterly Journal, August*, 1852, *p.* 253.

116.—*Cachexia Eczematosa in Children.* By Dr. W. S. Oke.—This disease is very common amongst the ill-fed and neglected children of the lower classes. There is a pale and sickly aspect, and on different parts of the scalp the hair is matted together with filthy scabs of eczematous secretion, from which exudes a thin and irritating discharge. There are also weak ulcerations behind the ears, and about the angles of the mouth, and on the nares, &c.

There is no eruptive disease more easily got rid of than this, provided the treatment be carefully carried out. The whole of the scalp having been closely clipped, and the scabs removed by poultice or fomentation, the eczematous parts are to be smeared by the ointment, 1, twice a day, and well fomented before each application. The alterative dose, 2, is to be given twice a week, and the strength supported by 3. By these means the removal of the disease will be at once accomplished.

1.—℞. Unguenti hydrarg. nit. oxidi, oz. ss. Bis die applicandum digito.

2.—℞. Hydrarg. cum cretâ, gr. iij. Pulv. rhei, gr. iv. Pulv. cinnamomi, gr. j.—Misce fiat pulvis bis hebdomadâ sumendus in theriacâ.

3.—℞. Quinæ disulphatis gr. ij.—iij. Acidi sulphurici dil., gtt. vj. Tinct. aurantii, co. Syrupi zingib. sing, dr. ij. Aquæ destillatæ, ad oz. iij. Misce capiat cochleare largum bis quotidie.—*Provincial Med. and Surgical Journal, Dec.* 24, 1851, *p.* 698.

117.—*Treatment of Lupus Exedens.* Under the care of James Startin, Esq.—[The following case is a good illustration of the mode of treating this disease in the hospital for diseases of the skin.]

On February 25th, 1852, Emma Munday, aged 25, of light complexion, was admitted as an out-patient, under the care of Mr. Startin. For eight years past she had suffered from the eroding form of lupus on the tip and left ala of her nose, both of which parts were completely destroyed. The ulcer had ragged, firm edges, and was surrounded by flat indurated tubercles, of a violet colour. During the first two years, she stated that the disease existed as a single, broad-based, firm tubercle, covered with desquamating layers of epidermis, and which gradually took on ulcerative action. Since that time it had slowly but steadily progressed, in spite of the variety of treatment which had been tried. Her home was in London, but she had, in hopes of benefit, paid long visits to the country, both inland and at the sea-side. As, however, is usually the case in this form of the disease, change of air had always aggravated her complaint.

Treatment.—A solution of the nitrate of mercury in concentrated nitric acid was freely applied, with a glass brush, to the whole diseased surface, including all the surrounding tubercles, and over this was painted a thin coating of prepared collodion. She was ordered to take a teaspoonful of cod-liver oil three times a day, with a pill every night containing a grain of calomel and a third of a grain of opium.

March 4th.—The whole surface suppurating freely, the epidermal covering of the tubercles being quite destroyed. An arsenical powder, made into a paste with water, was thinly applied. To continue the medicines.

During the first three months, one or other of the caustics was usually applied every fortnight, though often in a very small quantity; the acid being selected for any fresh tubercles which appeared, and its effect followed up by the paste until the raw surface took on a new and healthy action. The constitutional treatment was continued up to July 20, when she was dismissed quite cured, all surrounding thickening having disappeared, and a pale soft cicatrix being all that was left to mark the seat of past ravages. The mercurial, though continued so long, had not produced ptyalism, or any other unpleasant effect, save once or twice a slight

attack of griping pains, which subsided on omitting the pills, which she had been directed to do occasionally. In constitutional vigour she improved throughout the treatment, and when discharged she was stout, and expressed herself as feeling unusually strong and well.—*Med. Times and Gazette, Aug.* 7, 1852, *p.* 141.

118.—*On the Medical Uses of Urate of Ammonia.* By Dr. Bauer.—Five years' observation has convinced Dr. Bauer that this is a most valuable medicine in chronic cutaneous diseases and in tubercular diseases of the lung. An ointment containing one scruple to the ounce, is applied by a pencil to the eruption night and morning, the cure being effected in from one to three weeks. In tubercular disease the ointment is rubbed in alternately night and morning on the back and front of the chest. No inflammatory complication should be present during its employment.

In reference to this substance it is interesting to observe, that in Columbia, South America, where lepra prevails so extensively, the benefit derived from the external and internal use of *guano* has been placed beyond all doubt; and Dr. Lallemand has found it of great utility in the treatment of morphæ in the Brazils. The urate of ammonia, which is found in this substance in great abundance, is probably the chief medicinal agent.—*Buchner's Report.—Medico-Chirurgical Review, July*, 1852, *p.* 277.

119.—*On the rapid Cure of Itch.* By MM. Hardy and Devergie.—M. Hardy states that by the modification which he has introduced into the mode of treating the itch at St. Louis, he is now enabled to definitely cure a patient in *two hours*, so that it is in contemplation to treat all patients suffering under this disease as out-patients. The entire body is first thoroughly rubbed for half an hour with soft soap, which has the effect of breaking up some of the furrows in which the acari are lodged. A tepid bath is next employed for one hour, in order to soften the epidermis, the patient continuing to wash himself well while in it. Finally the patients rub each other thoroughly for half an hour over the entire surface with the sulphur ointment (lard 8 parts, sulphur 2, subc. potass 1), and the itch is cured. The various secondary eruptions, formerly confounded with the itch, may require several days for their dispersion, by means of simple baths. In 4 only out of 400 cases so treated, have relapses occurred, and 144 cases out of 145 occurring in June were so cured.

In this way the disease spreads by contagion much less than heretofore, when the patients had to wait until they could obtain admission into the hospital.—In a recent paper, however, M. Devergie expresses his opinion that this rapid cure of a disease which has often been long persistent, is a practice not to be followed, as being dangerous to present or future health. In certain forms of itch the secretion is abundant, and when the disease has been mistaken, this may increase, so as to form a kind of purulent emunctory not to be at once destroyed with impunity. It is probable, that some of the internal abscesses, which have been observed in cases of this disease, have arisen from its repercussion; and certainly in no other form of pustular eruption would the practitioner thus act. The itching or pruritus which is produced is not entirely an indifferent matter, and the habit of nocturnal scratching must not be suddenly suppressed. Even when pedicular disease or prurigo is suddenly arrested, dangerous pulmonary congestion sometimes occurs, requiring active rubefacients, although here little or no secretion has been suppressed. A single gentle friction suffices to destroy the contagious property, and it is best to complete the cure by repeating such for five or six days, than to run the risk, by too violent friction with very strong ointments, of producing the too sudden repression, or of exciting various forms of eczematous or lichenoid eruptions, which are sometimes more difficult to cure than the original disease, especially among the working classes, who are so apt to neglect the condition of their skin.—*Union Méd.; Bull. de Thérap.—Medico-Chirurgical Review, July*, 1852, *p.* 276.

120.—*On the Use of Yeast in the Treatment of Boils.* By J. R. Mosse, Esq., Fareham.--[Having read in the 'Lancet' Mr. Hunt's paper on the prevailing furunculoid epidemic, Mr. Mosse is led into the following remarks:]

These troublesome boils are equally as painful to bear as obstinate to cure, hardly yielding to any treatment by ordinary medicinal means, for no sooner do you succeed in getting rid of one ere another appears, thus baffling and setting at defiance most remedies.

During a period of eight years and more, being in practice in the West of England, where these annoyances rather raged, and were known by the name of "pinswills," I was induced to try the efficacy of common yeast (having failed to give relief by general modes of treatment), in doses of a tablespoonful with some water, three times a day, for an adult, and smaller doses for children.

I have now practised in this town nearly six years, and have had frequent opportunities also here of witnessing the good effect of yeast in these troublesome affections, easily consummating a rapid and complete cure without further recurrence, and by a most simple remedy, within reach of all.—*Lancet, July* 31, 1852, *p.* 113.

121.—*Operations for Cicatrices from Burns.* By W. Fergusson, Esq., F.R.S., &c.—[Most cases of interference with the knife in dividing the cicatrices of burns, so far from benefiting the patient, have actually seemed to increase the tendency to contraction. At the Orthopœdic Hospital, gradual stretching of the parts seems to have had a valuable effect; but from the following case of Mr. Fergusson's, a combination of the knife and extension seems likely to lead to a favourable issue.]

Martha S., aged 17, single, was admitted Nov. 25, 1851, under the care of Mr. Fergusson. When 6 years old, while lighting the fire, the girl's gown caught fire and her clothes were completely destroyed, burning severely both her arms, the upper part of her neck, and back. In about two years she was completely restored, but a great many cicatrices were left, causing great deformity.

On admission, one of these was found extending transversely between and under the two angles of the jaw, drawing down the bone and mouth towards the sternum, and preventing the patient from closing her mouth. There were, besides, some large cicatrices on both arms, from the elbows to the hands, and several on the back and shoulders. In the centre of the cicatrix of the neck a circular aperture was noticed, about the size of a siver fourpenny piece, which was caused by an involution of the skin forming a *cul-de-sac* about one inch deep. Either way beneath the cicatrix on each side of this sac, were the two firmest bands which were drawing down the chin.

On Dec. 13th, 1851, Mr. Fergusson passed a knife into the sac, and made a V-shaped incision on each side of it, thus dividing the two strongest bands of the cicatrix, and then dissected each of the flaps backwards. In this manner, the fold of skin which formed the sac was unravelled, and the girl could now extend the neck. On the next day the latter was kept extended by means of pillows placed under the shoulders, the head being allowed to hang backwards over the bolster. Three days afterwards the neck was still more extended by means of a double bandage passed round the forehead; the extremities of the roller being turned in the figure of 8 between each axilla, and over the shoulders.

Six days after the operation, the wound looked much larger, and with an effort she could close her mouth. The patient thus progressed favourably for about four months, when the movements of the head had become quite free, and she was discharged in a favourable condition.—*Lancet, June* 26, 1852, *p.* 612.

122.—*Treatment of Contracted Cicatrix.* By Mr. Tamplin.—I have lately had an opportunity of witnessing some very novel and satisfactory results of the process of extension upon the frœna and contractions of old burns of the neck and limbs. Mr. Tamplin, of the Orthopœdic Hospital, the ingenious contriver of this plan of treatment, has succeeded in straightening and restoring parts so circumstanced in

a most marvellous manner where excision had wholly failed, as it notoriously does upon these occasions.

In one very bad case, a dense cuticular band, confining the forearm, and entirely suspending all power of motion in the injured limb, was completely reduced and disappeared in about twenty weeks after the application of an apparatus along the back of the arm throughout its extent. The strain, which is never relaxed by day or night, has the effect, in the course of time, of producing an absorption of the substance of the band or web, and as the parts slowly yield under the stern influence of such measures, the power of motion recommences, which should be expedited by passive exercise from time to time.

The Reviewer observes:—We cannot help here making the observation that the principle of treatment inculcated by Mr. Tamplin, and practised by him at the Orthopædic Hospital, upon contracted cicatrices, is one of the most important improvements in the practice of modern surgery with which we are acquainted. The frightful operations resorted to for the cure of deformities thus produced, are amongst the horrors of our profession, and almost make the blood run cold in thinking of them; whilst, as is well known, their success was most doubtful, and their hazard to life very great. We believe that this plan of treatment is yet in its infancy.—*Medico-Chirurgical Review, July*, 1852, *p.* 29.

DISEASES OF THE EYE AND EAR.

123.—ON THE OPERATION FOR CONGENITAL CATARACT.

By William White Cooper, Esq., Ophthalmic Surgeon to St. Mary's Hospital.

[In a clinical lecture upon this subject, Mr. Cooper makes the following pertinent remarks. First:]

As to the age for operating on congenital cataracts. On this point some diversity of opinion exists; but there can be no doubt that, if possible, the step should be taken before teething has begun; and if circumstances do not admit of this, it will be prudent to delay the operation till teething is at an end. The extreme youth of a child is no objection. I have operated (in one case) at the age of three weeks and five days; but perhaps between the second and fourth month is the best time. It is important not to delay the operation beyond the fourth or fifth month, as the eyes speedily acquire that oscillation,—that restless seeking after light, or rather sight, which is very characteristic of such cases; and after puberty this is extremely difficult to overcome. I have watched with interest the mode in which command is acquired over the eyes. At first they are very intractable; the patient, as the dawn of vision is breaking and a new world opening upon him, tries hard to bring them under subjection; they can be fixed but for a second or two, then backwards and forwards they roll with increased velocity; little by little you see the dominion of the will; the rebellious muscles gradually give way, until at length a few spasmodic twitches, lingering like expiring embers, are all that remain of the previous distressing oscillation. Though Cheselden, Ware, and Hey, had operated with happy effect on congenital cataracts, and Mr. Gibson, of Manchester, threw much light on the subject, Mr. Saunders was the first to systematise the matter, and to lay down clear and definite rules for the treatment of the disease. His attention was especially drawn to it by observing the absorption of traumatic cataracts; and he determined to improve upon the suggestion of accident, by applying to it the rules of art. In the first instance, he used a very large needle, which he thrust through the sclerotic and behind the iris, cutting up the lens into small fragments, which sometimes nearly filled the anterior chamber. Finding, however, that formidable inflammation was often excited by this proceeding, he modified it, reducing the size of the needle, and contenting himself with a careful laceration of the centre of the capsule; and, towards the close of his life, he did this by puncture through the cornea. His straight needle has, with trifling modifications, been retained, and is that generally employed. I must however mention, that among the valuable contributions to ophthalmic surgery rendered by Dr. Jacob, of Dublin, is his peculiar needle for the anterior operation for solution.

The operation which, in common with many others, I adopt as a general rule for congenital cataracts, is this anterior operation, or *keratonyxis*. With a fine needle, sharp at the point and shoulders, but with a shaft well calculated for preventing the escape of aqueous humour, I lacerate the capsule as near the centre as possible, cutting it in several directions, at right angles to each other, but not to any extent. The object of this is to permit the aqueous humour free passage to the lens, which speedily swells by imbibition, and becomes white and opaque. If the capsule be too much torn, the lens may slip out, and fall bodily into the anterior chamber; or, if its consistence be soft, part of its substance may be squeezed by the action of the muscles through the wound, just as paint is squeezed out of the small colour bladders used by artists. Should no inflammation be excited, the operation may be repeated in about three weeks; and as by that time the substance of the lens has softened, the needle may be used more freely in breaking up its mass, especially the centre of the lens. On many occasions I have observed this; a good central perforation has been made in the lens, sufficiently large to allow a clear view of the black pigment at the back of the eye. In thirty-six hours this aperture had closed up,—the particles forming the remainder of the lens appearing to be drawn together by the attraction of cohesion; the cataract became reduced in thickness, but without the least perceptible opening; after a time, a mere thin scale was visible in the pupil, the particles of which could be freely disintegrated, were then soon absorbed, and sight was restored.

Generally speaking, three operations suffice for the removal of congenital cataract; less may be required—more are seldom needed; and if the pupil be well dilated and the operations performed with judgment, the proceeding may almost certainly be expected to succeed. I may, however, remark, that the danger of inflammation holds a direct ratio to the age of the patient. I have never known it to arise in infants; seldom under puberty; but after that age the patient should be carefully prepared by diet, regimen, and if necessary, by medicine. Not but that a patient may be over-prepared, and brought into such a state of irritability as to bring about the very event intended to be obviated. In like manner he may be over-treated after the operation; and I am decidedly of opinion that success is to be obtained after all operations on the eye, just in proportion to the judgment and tact with which the patient is treated.

Sir Charles Bell, in his 'System of Operative Surgery,' when speaking of the operations for congenital cataract, and the application of belladonna to these cases, as recommended by Mr. Saunders, says: "It is evident notwithstanding the use of the belladonna previous to the operation, that it is of no service; but on the contrary, the great dilatation of the pupil, occasioned by the use of it, endangers the falling forward of the lens, and a destructive inflammation may be the consequence of this accident." With all deference to Sir Charles, I entirely differ from him. If the needle be properly used, there is little fear of the lens becoming dislocated; but, if such an accident should arise,—and it is the action of the muscles which causes it, not the support of the iris which prevents it,—it is far better that the mass should not be bulged against the iris, which it would certainly irritate and inflame. Should the lens, or a larger fragment of it, fall into the anterior chamber, and there excite irritation, it may be extracted; but, I repeat, that it depends upon the operator to prevent such an occurrence. One object of the dilatation of the pupil, is to remove the iris out of the way, so that fragments projecting from the lens may not press upon it; effusion of lymph and irregularity of the pupil being the natural consequences of such pressure. But another, and not less important object is, to afford the operator a clear view of the surface of the cataract, and an ample field for the play of his needle during the operation; and subsequently, to enable him to watch the progress of the absorption, and to see that no untoward circumstance passes without notice.

Until the discovery of chloroform, the usual proceeding, when about to operate for cataract on children, was to swathe them either in a sheet or jack towel, so as to completely confine the arms and legs. This overcame a portion of their resistance; but few who have not tried it can be aware of the firmness with which a child can close its eyelids, or the force necessary to open them and to fix the globe for operation. This was highly objectionable, causing the eyes to be greatly injected before the needle was introduced; and, with the crying and spasmodic

action of the muscles, predisposing to inflammation; if that was of rare occurrence, it was to be attributed to the Providence of nature, rather than the gentleness of the surgeon. Happily all this violence is now unnecessary; the operation can be performed under chloroform with the utmost facility, and without causing a single vessel to become injected. It is well, however, in all operations on the eye under chloroform, to be prepared with not less than two assistants,—for twice during the operation of extraction, and once during the removal of a cyst from the interior of the eye, have I seen the patient partially recover, and offer resistance at a critical moment; he must, under such circumstances, be held by force until a second administration of chloroform fully overcomes him. I have said, that, if carefully performed, and on a patient previously prepared, inflammation is a rare occurrence; and this leads me to remark on the great change which has taken place during the last forty years in the treatment of patients who have undergone operations on the eye. I cannot select a better illustration than a short summary of two cases related by Mr. Saunders.

A man of the name of Smith was operated on by Mr. Saunders on the 18th February, 1807. The posterior operation for solution for congenital cataract was performed in both eyes. There was a good deal of sympathetic disturbance the same evening, vomiting, and pain in the head; he was bled to 26 ounces, and an ounce and a half of sulphate of magnesia administered, but rejected by vomiting. At half-past seven the following morning, the left temporal artery was opened, and 48 oz. of blood abstracted; and the same evening, 33 oz. were taken from the arm. "After this evacuation," says Mr. Saunders, "he remained low and tranquil, and his respiration became natural; his eyes were not more inflamed than they had been in the morning; both pupils were dilated." During the day, 10 grains of calomel and opening medicine had been administered; the following day, 10 more grains with 2 scruples of cathartic extract, were taken. Mr. Saunders adds, "I purged him simply every day, from the 21st of February to the 2nd of March." From that time till the 15th, as there was a return of irritation, he took 2 grains of calomel and 1 of antimony every night; and a purging powder in the morning; but we find, on the 31st, that there was still a considerable ophthalmia of the right eye, and the pupil of the left eye was contracting. He ultimately underwent two more operations, and was eventually restored to sight.

On the 18th August, 1807, Mr. Saunders operated on the left eye of Fanny Crawford, a child 13 years of age. He says, he very freely opened the capsule and the texture of the lens, leaving the latter projecting towards the cornea, and pressing upon the iris, which was rigidly contracted. In the evening, she felt great pain, which was increased on exposure to light. Eight ounces of blood were taken from her arm, and 5 grains of calomel were given her. On the following day, the pain had ceased, but the eye was irritable, and 11 oz. of blood were taken from her; she was also smartly purged. On the 30th the operation was repeated on the same eye, the needle being freely used; in the evening, there was considerable pain in the eye; whereupon 8 oz. of blood were taken from her arm, and she was briskly purged with calomel and sulphate of magnesia. On the following day, the 31st, the eye was inflamed; whereupon the temporal artery was opened, and she lost 8 oz. of blood. On the 1st of September, the inflammation was subdued, but she was ordered a scruple of jalap and a fourth of a grain of tartarised anatomy every four hours. On the 8th of November, the right eye was operated on, the capsule being extensively opened, the whole texture of the lens loosened, and a considerable quantity of its particles projected into the anterior chamber. The following day, there was considerable ophthalmia, for which she was bled to 8 oz. and the same quantity taken on the following day. The sight of both eyes was ultimately restored.

There are few persons in England at the present day, I apprehend, who would take five and thirty ounces of blood from a child of thirteen in about three weeks, to subdue even a rather severe attack of inflammation of the eye, and probably the number of persons is even less who would abstract 107 ounces in thirty-six hours from a man, though both eyes might be severely inflamed. It is found that by previous preparation before the operation, the risk of inflammation is materially diminished, and that by the use of belladonna, by sedatives, fomentations, and, if the symptoms be severe, the removal of a moderate quantity of

blood, together with mercury, if necessary, inflammation excited by the operation of solution can almost certainly be subdued without the fearful shock to the constitution which such enormous depletion cannot fail to excite. Before operations on the eye, an adult in fair health should be desired to abstain from stimulants for five days, and meat for three days, and, on the day immediately preceding, his bowels should be emptied by a dose of aperient medicine. This applies to ordinary health. Of course the measures must be modified according to the peculiarities of each individual case.—*Med. Times and Gazette, July* 17, 1852, *p.* 58.

124.—*On the Operation for Cataract.* By J. Dalrymple, Esq., F.R.S.—In operating for cataract, Mr. Dalrymple formerly employed Tyrrell's knife, but of late years adopted the sickle-shaped knife invented by Mr. Scott, with which he made the incision very neatly. He always used his right hand, standing behind the patient for the right eye, in front for the left, and generally—always for the right eye—making the upper section: the recumbent posture was that preferred for the patient. He, like Mr. Tyrrell, used dry bandages, considering that the application of wet rags to the eye predisposed to rheumatic inflammation. So, unquestionably, it does, if continued too long; but we have seen the greatest comfort afforded by such application, during the first twelve or twenty-four hours after the operation. Mr. Dalrymple opened the eye on the third or fourth day, and decidedly objected to the severe depletion practised by the German school. Indeed, he was so well aware of the necessity of support in feeble constitutions, that in many instances he allowed generous diet from the first. The following remarks illustrate his views. "The proper subject of this operation (extraction) must be selected with care. The feeble, those with habitual cough, asthmatic or rheumatic subjects; should be avoided; also those of a very nervous or excitable temperament, or those labouring under extreme plethora or venous congestion. The great object is to secure primary adhesion of the corneal section. In the very feeble, or where the patient labours under venous congestion, the adhesive process is imperfect. In the former, the wound perhaps closes only at its extreme edges, the iris prolapses, and the cure is slow, incomplete, and the pupil more or less disfigured, and sometimes even closed. In the latter, extensive chemosis is apt to take place, and from impeded capillary circulation, the cornea becomes opaque, and finally sloughs. In the strong and healthy, inflammation of an acute character may be set up, but this is more easily dealt with by our antiphlogistic resources: but beware how you spill a single drop of blood in the feeble or congestive subject, however red or swollen the eyes or eyelids may appear. The rheumatic patient must not be operated on in cold or damp weather; for at these seasons a slow, painful, and often dangerous inflammation is set up, which seldom leaves the eye undamaged."

These remarks illustrate the principles which guided Mr. Dalrymple's management of cataract cases: and we may add, that he scarcely ever operated between the months of October and May, or if possible during the prevalence of an easterly wind.—*London Journal of Med., July*, 1852, *p.* 649.

125.—*Mr. Bowman's New Operation for the Division and Removal of False Membrane or Opaque Capsule from the Axis of Vision.*—[From the tough and resisting nature of these bands, it is well known that a cutting needle often fails to divide or tear them; and thus from the stretching of the parts the iris and ciliary body, to which they are often attached, are very liable to be injured by such a proceeding. Mr. Bowman obviates this by a new and simple method of operating.]

The peculiarity of Mr. Bowman's method consists in the use of two ordinary cataract needles simultaneously. They are introduced through different points in the cornea down to the band of the membrane, and their points having entered it at the same or neighbouring situations, as convenient, are then separated, tearing it across, and carrying it in two fragments to opposite sides of the pupil. Thus

there is no drag put upon the vascular parts, and the only tissues touched are the cornea and the opaque membrane itself. One needle may be made to furnish a fixed point of resistance from which the other can act with advantage. During the last ten days this method of operating has been successfully adopted in seven instances. Three of them are cases in which, after the removal of the lens by drilling, the pupil still continued closed by false membrane; and in the other four the sight was more or less interfered with by bands of lymph or tough opaque capsule passing across the axis of vision behind the iris.

We have selected the following cases by way of illustration:—William Henderall, aged 28, a soldier, was admitted as an out-patient, August 3, 1852, being totally blind from the effects of syphilitic iritis. In each eye the pupil was rather less than medium size, irregular and completely occluded by opaque, whitish, false membrane. He stated that two years previously he had, in conjunction with other syphilitic symptoms, suffered a very severe attack of inflammation of his eyes, for which he was six months under care in a military hospital. When discharged, he was much in his present condition, and had ever since been quite blind.

Mr. Bowman performed, on the right eye, the operation of drilling, which, after a month had elapsed, was repeated.

On Oct. 15, there was a small open point in the centre of the opacity, which was perfectly black, and through which he had perception of light, and could distinguish large objects. In the hope of still further improving his sight, it was determined to attempt to get rid of a larger portion of the opaque membrane. Two cataract needles were accordingly introduced into the eye from the opposite sides of the cornea and passed down in such a direction that their points met in the centre of the false membrane. On separating them, the latter at once tore vertically down, and its two halves, being carried, one to each side, were lost behind the iris, leaving the pupil perfectly clear.

Oct. 23. The inflammation which followed the operation has been but very slight, and affecting only the conjunctiva. The man has now an oval pupil of fair size, quite clear, and black. He can see with tolerable distinctness, and his sight is daily improving. Mr. Bowman intends before long to perform a similar operation on the other eye.—*Med. Times and Gazette, Oct.* 30, 1852, *p.* 438.

126.—*Needle, with Moveable Point, for Depressing Cataract; and a New Instrument for Section of the Cornea, in the Operation for Cataract.* By M. LANGIER.—Almost every surgeon must have experienced the inconvenience of the ordinary cataract needles, with a fixed point. Displacement of a fragment of the lens, or of a portion of the opaque capsule, can only be effected by making the lancet describe extended arcs of circles, having as a centre the point of the sclerotic traversed by the instrument. The extent of these arcs leads to too great lacerations of the hyaloid membrane, and sometimes even to injury or detachment of the iris. M. Langier believes that these difficulties and dangers may be partly avoided by articulating the point on the stem of the needle, the point being moved by means of a lever in the handle, like the key of a flute. By means of this modification, the centre lens, or a portion of its capsule, or false membranes, may be readily removed from the field of the pupil. It may be introduced quite straight into the eye; and, when arrived in front of the cataract, may be placed at any angle which the operator may desire, and is susceptible of alternate extension and flexion, according to the object which it is proposed to attain. The motion of the point resembles that of the third phalanx of the fingers; and it would be very easy to make an instrument with two joints which, however, M. Langier has not yet found necessary. With a single joint, the movements of the flexion and extension of the point may be subservient to a number of purposes, such as in breaking up the cataract, tearing through its adhesions, and even forming artificial pupil, either by tearing down adhesions, or by detachment of the iris.

M. Langier has also combined with the jointed needle a concealed cornea knife, by which he believes that the section of the cornea will be made more surely than with the scissors of Richter or others. This keratotome, at the end of which is the articulated point, is a little larger than the ordinary needle. It is much like a

lithotome with a single blade; but the blade is not contained in a sheath, which would uselessly increase the size of the instrument, but it is merely applied to another blade, with blunt edges, which cover it, and which contain the spring for moving the point of the needle.

In operating, a large opening may be made in the capsule by the point of the needle, which is directed towards it through the dilated pupil. It will then penetrate the lens, and bring it either by the movements which may be communicated to it, or by simple pressure above or below, into the anterior chamber. In withdrawing the instrument by the passage by which it has entered, the blade of the keratotome separates from the flat stem on which it lies, and incises the cornea, for a fourth or third, at most, of its diameter. This incision is long enough in most cases. One advantage of the concealed cornea knife, M. Langier states to be that of incising the cornea from within outwards, so that the deep layers of the membrane are cut to the same extent as the superficial.

In the wood-cuts which accompany the description, the motion of the keratotome is represented as being regulated by a ring in the handle of the instrument.—*London Journal of Med., Oct.* 1852, *p.* 929.

127.—PRACTICAL REMARKS ON DISEASES OF THE EYE.

By James Dixon, Esq., Surgeon to the Royal London Ophthalmic Hospital.

[The object of Mr. Dixon's paper is to endeavour to explain the manner in which cataract is developed in elderly persons, and also in which it extends itself. Most ophthalmic writers consider the opacity to commence at the centre of the lens, and the cases to be exceedingly rare in which it commences at the margin. Mr. Dixon's observations have convinced him that the striæ of the so-called "posterior capsular cataract," and those which begin at the margin of the lens, are but the ordinary phenomena of the first stage of senile cataract. Mr. Dixon attributes this difference in opinion between himself and most authors, to be from his less frequently employing belladonna and artificial illumination in examination of the appearance and structure of the lens. These are the symptoms of the approach of this complaint.]

An elderly patient presents himself to the surgeon complaining of some slight mistiness and indistinctness of sight. The iris may be active; the area of the pupil of natural blackness. Cataract will not suggest itself to the surgeon, if he be prejudiced by believing that it almost always commences in the centre of the lens; and he will probably regard the dimness of sight as altogether of nervous origin. But let him fully dilate the pupil with atropine, and then throw light upon each part of the lens in succession, by means of a convex glass of about one-inch focus, he will perhaps find the whole posterior face of the lens covered with faintly yellow, opaque lines, radiating inwards from the margin, and, along the latter part, grouped together here and there into patches; or these marginal patches may exist at one or two points only, the hinder face of the lens being in great part clear. This would denote a still earlier stage of the disease. Or again; in addition to opaque patches at the edge of the lens, a few striæ may be traced along the front surface, stopping short of the border of the natural pupil. The anterior position of the latter striæ can of course be at once recognised by a practised observer; but it may aid the less experienced to be told that the opaque streaks of a cataractous lens are in themselves whitish. Those on the front surface, therefore, being viewed through colourless media—the cornea and aqueous humour—retain their white appearance; while those behind acquire a yellow cast, from being seen through the still transparent part of the lens.

This body is naturally colourless only during the earlier years of life. After the age of forty, it always assumes a pale-yellow tinge; and this continues to deepen as age advances, quite irrespectively of any change in its transparency. This fact, which I have repeatedly observed in recent bodies in the dead-house, is important to be borne in mind by the young practitioner who is investigating the disease of cataract.

As I have already remarked, some of our highest authorities on eye diseases, who have repeatedly seen the deep-seated, streaky opacity at the edge and back

of the lens, believe it to depend upon disease of the posterior capsule. Tyrrell, although describing it as seated in the lens itself, does not assign any anatomical reason why opacities in that situation differ so essentially in appearance from those in the capsule. A knowledge of the microscopic structure of the two tissues, however, makes us at once understand why opacities in the capsule should be of an irregular, indeterminate figure, and those of the lens radiated: the capsule being a uniform, homogeneous membrane; the lens composed of fibres, radiating, on certain planes, with exquisite regularity.*

Whether cataractous opacity usually spreads from the centre of the lens towards the circumference, or from the circumference towards the centre, is—as the reader must readily perceive—no question of mere pathological nicety. It has an important bearing on diagnosis and treatment: for if the surgeon assumes that cataract almost always commences at the centre of the lens, he will frequently pass over cases of incipient concentric cataract, because no opacity is visible so long as the pupil remains in its natural condition On the other hand, a knowledge of the frequency of concentric opacity will lead him, in all cases of dimness of sight in elderly persons, to dilate the pupil, and, by means of concentrated light, thoroughly to examine every portion of the lens.

If this be done, I am sure he will find that when cataract, *at an early stage*, is detected *in old persons* (these two conditions are essential), the relative frequency of marginal opacity, as compared with that beginning at the centre, will force him to come to the same conclusion as I have done—namely, that the former mode of development is the rule, and the latter the exception.

According to my experience, the following is the ordinary progress of what is termed "hard cataract." At first opaque streaks appear at the extreme edge of the lens: most commonly the lower edge is first affected. These gradually spread themselves over the posterior face, a few only extending a short distance along the anterior face. The cataract may perhaps remain at this stage of development for a year or more: then the whole body of the lens becomes slightly hazy, but not so much so as to prevent the posterior, radiated opacity from being recognised. Gradually the opaque streaks advance farther and farther along the anterior face of the lens, until they appear within the area of the undilated pupil. By this time the general haziness has increased so much that the posterior face of the lens is hidden from view, even when concentrated light is thrown into the eye; and the opacity, both the linear and the diffused, become denser and denser, until little more than the anterior surface of the lens can be seen. Cataract is then complete, and vision commonly restricted to mere perception of light.

I cannot expect (nor do I wish) that a mere assertion of mine, opposed as it is to the recognised teaching of the best authorities, should be at once received as true. In a future paper, therefore, I propose laying before the reader a table of cases of incipient cataract, examined in the way I have already indicated, and with every precaution I could devise against an unfair bias in favour of a particular theory.—*Lancet*, *Sept.* 18, 1852, *p.* 260.

128.—ON HELMHOLTZ'S SPECULUM FOR EXAMINING THE RETINA IN THE LIVING EYE.

By Dr. W. R. Sanders.

[Dr. Sanders having, by this instrument, been enabled to view distinctly the retina in the living eye, ventures to bring the discoveries of Professor Helmholtz before the profession.]

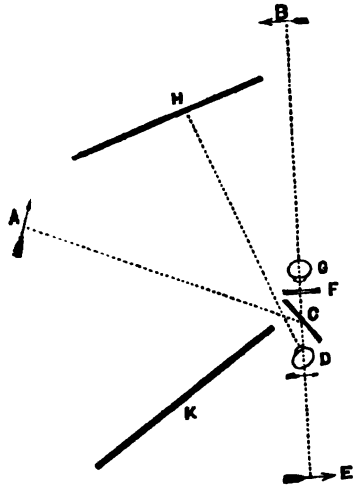
The new eye-speculum consists essentially of two parts,—1st, Reflectors to illuminate the retina; 2d, Lenses to bring its structures within our focus of vision.

* I would not be understood as affirming that the posterior capsule never primarily becomes opaque. I only insist on the anatomical fact, that the regularly *radiated* opacity at the back of the lens is due to a change in the posterior layer of its fibres. I have seen in this situation patches, of uniform density throughout, which I have believed to be in the capsule itself. In some cases they were eventually followed by extension of opacity to the lens.

Much valuable information on the subject of capsular opacities, and on cataract in general, will be found in a little volume 'On Cataract, &c.' (Dublin, 1851), by Dr. Jacob; written with his usual clearness and simplicity.

Illumination.—The possibility of seeing into the posterior chamber of a living eye depends on the fact, that the rays of light which pass into the eye, and fall upon the retina, are not completely absorbed there; but a portion of light is reflected from the retina, and passes out again through the pupil. According to the laws of optics, these reflected rays, in proceeding out of the eye, must pursue, in an opposite direction, exactly the same course which they took on entering it. Thus the rays from a luminous point fall diverging on the cornea, and are converged by the media of the eye to a focus on the retina; in return, the rays reflected from the retina pass diverging to the cornea, and, on leaving the eye, are converged to a focus at the luminous point from which they came. The same applies to a luminous body. The rays from a gas flame unite in a picture on the retina, from which the unabsorbed rays are reflected back to the gas flame, and concentrate there in an image of the picture on the retina; and the reflected image is placed on, and coincides in size and position with, the real gas flame. To see, therefore, into the posterior chamber of an eye, we must bring our vision in the straight line of the reflected rays. It is impossible, however, to do so directly, for we cannot interpose ourselves between the eye and the light without intercepting the latter. By approaching, indeed, as near as possible to this direct line, without being upon it, we may catch the irregular rays, and see the pupil of the observed eye illuminated, as Cumming and Brücke's observations have shown; but such methods are inconvenient, and the illumination obtained is insufficient.

Fig. 1.



By means of a plane transparent reflector, however, such as a piece of flat glass, we can place our vision in the direction in which the rays emerge from the observed eye. Thus let A (Fig. 1) be a flame, whose rays are caught at an angle on a glass plate C, the rays will be thrown along the line C D into the eye D, which will see an image of the flame at B, along the line D B; but the rays reflected from the retina passing out into the same line D C will again meet the plate C; they will be in part turned towards A, but part also will traverse the glass plate C, and go to form a picture at B of the image on the retina; but an eye G, placed behind the glass plate and on the line C B, will meet these reflected rays, and will consequently see the posterior chamber of the eye D illuminated.

The experiment is thus performed:—In a dark room, with a single flame at the side of the experimenters, and on a level with their eyes, the person whose eye is to be observed holds a piece of glass (a microscope glass slip), so as to catch the image of the flame on it; he then, by inclining the glass, brings the image of the flame opposite the pupil of the observer's eye; the latter will then see the pupil of the observed eye luminous, of a reddish-yellow bright colour, like what is called "cat's eye." A person may also see one of his own pupils luminous: standing before a looking-glass, and seeing the image of the flame in the reflector with his right eye, let him bring this image opposite the pupil of the left eye in the looking-glass; the left eye will then perceive the right pupil in the mirror luminous. The observer may also himself place the reflector when observing the eye of another person; by using a very small piece of glass, the reflection from this on a shaded countenance will indicate the direction of the light; and when it is thrown upon the centre of the eye, the observer looking through the glass will see the illumination of the pupil; and by turning the reflector in different directions, and allowing the observed eye to be moved, he may compare the amount of reflection from different parts of the retina.

To obtain the greatest possible amount of illumination, we may either employ

a large angle of reflection, or increase the number of glass reflectors. The most advantageous angles are given as 70° for one glass plate, for three glass plates 60°, for four glass plates 55°. Employing several glass plates is preferable to using a high angle; because the glass being less oblique is more easily seen through, the eyes are better shaded, and at 55° the polarised reflection from the cornea, which interferes with the observation, is nearly all stopped by the glass plate through which the other rays, depolarised on the retina, pass.

For these observations a good oil-lamp or gas-lamp is best; sun light let in through a hole in the shutter may also be used; the observed and observer's eyes should be carefully shaded, and, to prevent mistakes, the eyes not used in the experiment should be closed. This method of illumination is applicable to other cavities with narrow openings, as the ear, the nose, &c.

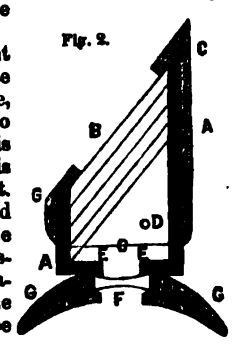
Lenses to bring the reflected rays to a convenient focus.—The luminous rays emerging from the eye D (Fig. 1), and passing through the glass C, unite at B to form an image of the picture on the retina. But at the distance at which B is from the observed eye D, the pupil of the latter, which limits the field of vision, appears so small, that the luminous image cannot be seen through it. We must therefore bring these rays to a nearer focus. Now the rays, on leaving the convex surface of the cornea, are convergent, and our eye can bring only slightly divergent or parallel rays to a focus; all that is necessary therefore is, to interpose a divergent or double concave lens F, of sufficient power, between those rays and the observer's eye. The amount of concavity required in the lens will depend on the distance of the luminous object from the eye; if the focal distance of the lens is equal to F B, the rays will be rendered parallel; or divergent, if the focal distance is less than F B. The conditions are the same as in the Galilean telescope or opera-glass, of which the convex media of the observed eye represent the object-glass, and the concave lens the ocular. For ordinary eyes No. 10 of the common concave spectacle glasses is recommended; and Nos. 6 to 12 will supply the changes of lenses necessary as the luminous objects are at less or greater distance. Short-sighted eyes will require stronger lenses, or two lenses, one above the other.

By means of the lens F, placed as close to the observed eye as the reflectors will allow, the picture on the retina will be seen under the same angle,—that is, of the same size as the image B appears to the eye D, or even a little larger; the parts of the retina will also be seen magnified in the same proportion. If the luminous object be distant from the eye eight inches, the magnifying power may be calculated at 24 times.

Instead of a concave lens, we might use two convex lenses, of which the first would form an inverted image, which would be magnified by the second. This would have the advantage, that, by regulating the distance between the two lenses, we might accommodate them to the eye looking at near or distant objects, for which purpose we require to change the concave glass. But they are more difficult to manage; there is less light or the image is less clear; and, as the rays must pass through the axis of the lenses, the requisite steadiness of the observed eye and the instrument is very difficult to obtain. Hence the concave lens is preferred in practice.

*The Eye-Speculum** (Fig. 2) consists of a convenient apparatus holding together the reflectors at the requisite angle, and the lens. This is easily done by a square tube, A A, as short as possible, with one end cut obliquely to form an angle of 56° with the base or other end, which is cut across at right angles to the tube. The exterior is bronzed or darkened; the interior lined with black velvet. The glass reflectors, B, which should be four parallel and well-polished slips of glass, are fitted on at the oblique end, and fixed close by an open frame, C C, which is fastened down to the sides of the tube by screws at D; a diaphragm, E E, and the concave lens, F, are placed at the base, and secured by a hollow eye-piece, G, which can be

Fig. 2.



* Fig. 2 is a view in section of the eye-speculum as made by Mr. Bryson, Edinburgh, simplified from Helmholtz's instrument.

screwed off and on, so as to allow the lenses to be changed. Bi-concave spectacle lenses No. 6 to 12 are used; for ordinary use No. 10 is convenient.

Method of using it.—In a dark room, with a flame at the side, and on a level with the eyes, which should be shaded by a screen K (Fig. 1), the reflectors are turned towards the observed eye, and adjusted, so as to throw the light on it in the direction of the axis of the instrument. By a little management, the observer will perceive the inverted image of the flame, and will select a suitable concave glass to see it distinctly. It facilitates much the observation to adapt our sight, as if the image were a distant, rather than a near object; and the observed eye should be directed towards a screen (H, Fig. 1), divided into squares, which are numbered so as to regulate the movements of the eye. The observation is also easier with large pupils; hence the importance of shading the eyes; and the use of belladonna might, in many cases, be of great assistance.

Appearance of the retina, &c.—If, when the apparatus is adjusted, and the flame distinctly seen, the observed eye be turned a little inwards, blood-vessels come into view, passing as it were over the flame; and by tracing these from their branches to the main stems, we come upon the central artery of the retina and the optic nerve, at once, recognised by its great brilliancy and whiteness; the whole optic nerve is lighted up at once, but no image of the flame is seen upon it. This spectacle of the red vessels on the transparent white ground is of surprising delicacy and beauty; and, when once seen, renders the observer immediately familiar with the objects to be examined; for the largest vessels and the brightest illumination exist here. The artery and vein are distinguished by the deep colour of the latter, but no pulsation is visible. These vessels dividing pass near the inner side of the optic nerve upwards and downwards, then give off numerous branches on the surface of the retina. There is a semi-circular shaded streak at the inner side of the optic nerve, apparently caused by a deficiency of the retina. The retina surrounding the white optic nerve is of a bright red colour, which becomes deeper towards the periphery, and is caused probably by the capillary blood-vessels, too small and too faintly illuminated to be distinguished from the gray substance of the retina. Large and small branching vessels pass on its surface, which everywhere shows a distinct image of the flame, brightest around the optic nerve, and fainter towards the periphery. The yellow spot of Sömmering, or spot of direct vision, is of a dimmer yellowish-gray colour, without trace of capillary vessels; its observation is rendered difficult by reflection from the cornea; and the luminous image is much less bright than on the adjoining parts of the retina.

Physiological Remarks.—We can ascertain directly that the eye alters its refracting powers to suit its focus to different distances. Thus the image of a flame and of the retina becomes indistinct when the observed eye looks at an object much more distant than the flame. Or if a thread be held horizontally before a flame, its image on the retina will be seen when near the flame, but become indistinct or disappear when the thread is moved from the flame towards the eye. It also appears that neither the optic nerve nor its fibrils in the retina are adapted for receiving impressions from light; otherwise, when part of the retina is illuminated, the corresponding portion of the periphery should perceive light; and when luminous rays fall on the optic nerve, the whole field of vision should be lighted up, as if the whole retina were acted on. But this is not the case; for even less light is perceived when rays fall on the optic nerve than on other parts of the retina. It is therefore the nerve-cells and corpuscles of the retina which perceive the luminous undulations, and localise them to the point on which they fall.

The practical applications of the eye-speculum may be expressed thus:—It enables us to perceive alterations on the retina just as the unaided eye lets us see alterations of the cornea, iris, &c. Thus, congestion, varicose vessels, exudations on or in the retina, or between it and the choroid (the fibre reflecting more powerfully, because less transparent than the retina, and obscuring the vessels). Short-sightedness may be directly detected by the curvature required for the concave lenses. The presence and degree of opacities of the crystalline will be more easily and certainly recognised. In short, nearly all that dissection has shown in the dead eye may, by this instrument, be recognised in the living one.—*Monthly Journal of Med. Science, July*, 1852, *p.* 40.

129.—*Complete Amaurosis cured by the Endermic employment of Strychnia.*—Strychnia and nux vomica have long been recommended in the treatment of amaurosis; but in the cases in which M. Riberi has hitherto administered the former, he has derived little or no benefit from its employment. He suspects, however, that he has not, in some of these, persevered long enough with it. The successful cases, indeed, hitherto on record, seem to indicate its use in incomplete rather than complete amaurosis. Induced by successful cases published by Maunoir and Petrequin, he resorted to the means again in a case of complete amaurosis, and with an entirely successful result. The patient was a country lad, æt. 16, of scrofulous habit, who at twelve years of age became addicted to onanism. When about fifteen, he accidentally found, on closing the right eye, that he was entirely blind of the left. The loss of sight was unattended by pain or any other symptom. About a year after he fell from a height, and concussion of the brain resulted. Upon this confusion of vision supervened, and eventually complete amaurosis of the right eye also. When admitted, the power of distinguishing light had been lost for a twelvemonth by the left eye, and for two months and a half by the other. As some cerebral congestion was present, he was freely bled and purged, and put on low diet. At the end of a week, the skin, first of the forehead and afterwards of the temples, was denuded by blisters, and a powder, composed of one-eighth of a grain of strychnine and three grains of nux vomica, was applied morning and evening, from the 27th of August to the 20th of September. After the third day, the light of a candle brought near the right eye was distinguished; and by the sixth day he could distinguish natural from artificial light; on the tenth he could see the fingers of the hand; by the twentieth, he was able to assist in the ward; and on the thirty-fourth, he had quite recovered the sight of the right eye, and could see his fingers indistinctly with the left. The right iris had quite recovered its movements, and a slight vermicular motion could be perceived in the left. He refused to remain longer in the hospital in order to attempt to obtain a complete cure of the amaurosis of the left eye.—*Medico-Chirurgical Review, October*, 1852, *p.* 446.

130.—ON THE USE AND ABUSE OF NITRATE OF SILVER DROPS TO THE EYE.

By Dr. T. Wharton Jones, F. R. S.

[When we meet with cases where the lower half of the front of the eye-ball and that of the lower eyelid are dyed of a dirty olive green colour, at the same time that the conjunctiva so dyed is callous, we may look upon them as produced by the long continued employment of solution of nitrate of silver dropped into the eye. Dr. Jones notices, first, the]

Mode of application.—The discoloration of the conjunctiva being confined to the lower half of the front of the eye and inner surface of the lower eyelid, is an evidence that the nitrate of silver solution, which is merely dropped into the lower palpebral sinus, never reaches the upper half of the eyeball, the inner surface of the upper eyelid, and the superior palpebral sinus. Now, this is a very ineffectual mode of applying remedies to the inflamed conjunctiva. To obtain full advantage from any eye-water, drop, or salve, in conjunctivitis, its application should be so managed that it may come into contact with the whole surface of the conjunctiva; and, for this purpose, when it is a solution which is to be dropped in, the eyelids are to be so drawn from contact with the eyeball that the fluid may readily spread itself under them and all over the front of the eyeball, this being promoted by alternately moving the eyelids to and from each other; or, supposing an ointment to be applied, care should be taken to insinuate a small quantity underneath the upper eyelid, whereupon the ointment will readily spread itself, not only underneath the upper, but also underneath the lower, by slightly rubbing the eyelids over the eyeball.

Operation of remedies to the eye.—In the first place, it is to be recollected, that it is only in inflammation of the conjunctiva, and in superficial inflammation of the cornea, that stimulating applications, as they are called, are of service. They are unconditionally hurtful in the internal inflammations of the eye. The

long continued use of nitrate of silver drops, whereby the conjunctiva becomes stained, appears to be founded on a notion, that the application has some special unconditionally sanative virtue, so that if it be only used long enough it will effect a cure. In a late number of this Journal, I endeavoured to explain the mode of operation of drops, ointments, &c., in pustular inflammation of the conjunctiva. I would now add, that if an inflammation of the conjunctiva does not quickly yield, more ill than good is likely to result from a persistence in the use of drops, &c., and some modification of the treatment ought to be adopted, suggested by the circumstances of the case, in order to bring the part affected into a state in which it may prove more readily susceptible to the stimulating remedy.

It is not to the purpose to say, that the nitrate of silver solution should never be used as an application. All the benefit that can be derived from its use may be effected without risk of dyeing the conjunctiva; while other applications, though they may not dye the conjunctiva, will, if as long and as improperly persisted in, prove not less prejudicial in other respects.—*Med. Times and Gazette, June* 19, 1852, *p.* 618.

131.—PRACTICAL OBSERVATIONS ON DISEASES OF THE EAR, WITH RECORDS OF CASES.

By W. R. Wilde, Esq.

Condyloma of the external meatus.—M. D. L., a female, 25, a seamstress, suffering from deafness, tinnitus, occasional pain, fetid and sometimes bloody discharge from left ear for eight months; is otherwise healthy: attributes her affection to cold. The external meatus is completely closed by several condylomata which grow around its margin, but particularly from its lower edge. They are rather sensitive to the touch, lobulated on their surface, project a considerable distance beyond the margin of the aperture, and are a little more florid in colour than the natural skin. When the tragus is pressed backwards with the finger, a muco-purulent and offensive discharge exudes between these growths. It is not possible to insert even a small-sized speculum into the meatus without causing great pain and irritation. She could only hear the watch on touching. The right ear was normal. They were touched with the solid nitrate of silver, after which a poultice was applied. The subsequent treatment consisted in washing over the morbid growths with a strong solution of nitrate of silver every second or third day, and in the intermediate time, keeping a dossil of fine lint, wet with diluted liquor plumbi, applied to the concha, besides the internal administration of Plummer's pill and sarsaparilla. By persisting in this treatment for upwards of two months, the condylomata disappeared, leaving the meatus natural, when the membrana tympani was found unimpaired, and the hearing was restored.

I have seen a case of cutaneous cancerous ulceration, extending from beneath the zygoma, which had quite eaten away the tragus, completely occluding the external meatus; but the most common causes of the diseases are eczematous and herpetic eruptions, and chronic erysipelas, as detailed in the two subsequent cases.

Eczema Aurium, thickening and closure of meatus auditorius externus.—M. Q., female, 60, has been deaf, "off and on," for several years past, accompanied by noise and wandering pains in the head, with extreme itchiness in the auditory passages. The skin covering the auricle, and the scalp adjacent thereto, is of a fiery red colour, speckled with patches of yellow, formed by the exudation which has collected in thin branny scales all over it. The parts are hot, and in some places sticky, from a thin ichorous matter which exudes from the surface. The auricle has lost its natural shape, its folds and sinuosities being partially obliterated, and it has become hard, thickened, and lumpy. The external auditory aperture has, owing to the disease extending into it, been lessened to a third of its natural size, and it is filled with a branny scurf. Upon removing the latter impediment, we can obtain but a very partial view of the membrana tympani, which appears to be thickened and opaque. Hearing distance, touching. The state of the parts is nearly the same on both sides.

In examining diseases of the external meatus and auditory tube, I find a small silver instrument, shaped like a blunt gorget, very useful.

Cases of this description, and, like this, of long standing, are very hard to manage,

because there generally co-exists some constitutional taint, as shown in the cutaneous eruptions often manifest in other portions of the skin, and because the parts now under consideration have become so much altered in form and texture that it requires a long course of treatment to restore them to their natural condition, and thereby re-establish their usual functions. The disease principally occurs in females in middle and advanced life; but it also happens to children from six to twelve years of age. In the latter, however, it is of a much more active nature, at the same time that it is much more amenable to treatment. In young persons the eruption often co-exists with scald head, and in both young and old, if the disease is allowed to exist for any length of time, it extends into the meatus, and even over the surface of the tympanal membrane, which it thickens, and renders opaque. In old persons a collection of branny scales accumulates in the external tube. In yonng persons a thick creamy discharge will generally be seen coating over the lining of the tube and the external layer of the membrana tympani.

Cleanliness and attention are indispensable to the eradication of these affections. In the first instance, continual poulticing with any emollient substance which keeps up heat and moisture is necessary. Linseed meal, boiled bread and milk, or well-mashed turnips will be found useful applications. Afterwards when the extreme heat, swelling, vesication, and redness have subsided, a solution of the liquor plumbi, in the proportion of a drachm to the ounce, applied with several bits of fine lint, so as completely to envelope the auricle, and the evaporation prevented by covering over the whole with a piece of oiled skin or thin gutta percha, rarely fails to lessen the irritation and reduce the parts to a healthy condition. But while we employ these local measures, we must not neglect constitutional means. Strict attention to diet should be enforced; salt meats, savoury dishes, and pastry ought to be avoided, and a sufficient quantity of fresh vegetables should be consumed at dinner. After the patient has been well purged, a course of Plummer's pill may be prescribed with advantage—at least five grains daily for an adult; and, in a little time, some of the preparations of sarsaparilla administered in lime water will hasten the cure, and assist to eradicate the disease from the system. This affection is very apt to relapse, and we should therefore continue both our local and constitutional remedies long after the inflammatory symptoms have subsided. Old ladies think they never can have a sufficient amount of warmth about their head, and it is very difficult to induce them to leave off even one flannel nightcap: but we should at least make the attempt, as the head and ear ought to be kept as cool as possible. As the swelling and inflammatory symptoms subside, we should again turn our attention to the state of the auditory tube. If any discharge exists, the meatus should be syringed gently with tepid water daily; and both it, the concha, and the tympanal membrane, washed over every second or third day with a solution of nitrate of silver of the strength of at least twelve grains to the ounce. Still more advanced in the progress of this treatment when the exudation has completely ceased and the thickened cuticle has been quite removed, much benefit will be derived from smearing over the tube and membrana tympani with brown citrine ointment every third or fourth day. This latter remedy, of which I have great faith in all diseases similar to that which we are now considering, should be made with either rape or cod-liver oil instead of the lard or butter usually directed in the Pharmacopœias. It is then of a much darker colour, and never becomes hard or crumbly. It should be applied in a melted state with a camel's-hair pencil, and diluted by about one third of almond oil.

Chronic erysipelas of auricle.—T. M., female, 52, has had frequent attacks of erysipelas of the head and face during the last five or six years. The effects of the disease are, however, now manifest only in the external ears, but more particularly the right. The auricle is not much enlarged, but has become hard, inflexible, and resembles a piece of wet thick sole leather; its fossæ being apparently filled up by subcutaneous deposit. It is also somewhat shortened in its antero-posterior diameter. The skin is of a dusky brown colour without any exudation, eruptions, or crusts upon it, but to the feel it is lumpy and nodulated, like what we find in certain forms of elephantiasis. The lobe in particular presents this thickened appearance. The disease has extended some way in front of the site of the tragus, which is also thickened and lumpy. The meatus is nearly closed. The treatment of this disease is very similar to that of the foregoing.

Dr. Kramer relates cases of scirrhous degeneration of the auricle, but it would appear that he has applied the term to cases similar to that now under consideration.

Enlargement of the sebaceous follicles in the concha frequently present in pale, cachectic persons labouring under aural diseases. They are easily recognised by their dark heads, and can be pressed out with a pair of forceps. Besides those eczematous eruptions which I described in one case, many other cutaneous diseases affect the auricle, particularly in children. You are all aware of the excoriations which take place in infants behind the ears during dentition, and of the popular belief that they are salutary. Cleanliness is their chief cure when it is advisable to heal them up. We have a disease in Ireland so prevalent in some countries, that it would appear to be one of our national maladies—*pemphigus gangrenosis*, first described by the late Dr. Whitley Stokes, and of which I have given a description in the medical memoir attached to the Census of 1841. So fatal is this disease among children that no less than 17,799 deaths have been attributed to it in ten years; and as it is a disease very well known to the lower orders, I am inclined to think that the amount has not been exaggerated. It goes under different local names, but the most common are "mortifying hive," "burnt hole," and "black ear;" the latter from its so frequently appearing behind the ears and upon the auricles. In the Irish it is styled *ithcheadh*, or the eating disorder, from its phagedænic character. The vesicles, or bullæ peculiar to this affection, generally leave an indelible irregular lace-like depression, similar to that of vaccination.

Anomalous tumour in the external meatus.—M. N., female, aged 47, has been deaf of the right ear for many years, and is much annoyed by itching and a stuffed feeling in the meatus. Upon inspection we find a tumour in shape, size, and colour resembling a half-ripe mulberry, occupying the anterior and lower edge of the meatus, and extending some way into the auditory tube, which it almost completely blocks up. It is not unlike that disease known here as button scurvy, and to which the late Dr. Wallace of this city gave the name of *morula*. It is attached by its broad base throughout its whole extent, and has neither enlarged nor extended for the last three years, during which time I have been in the habit of examining it occasionally. The patient never had otorrhœa, and there is no discharge now present, but occasionally the tumour becomes painful and irritable, and its colour deepens from a florid red to a purple. It is now of a firm consistence, corrugated on its surface, and has a firm unyielding feel, quite unlike a nævus, for which at first sight it might be mistaken. I will not meddle with this tumour at present, as I once saw an affection very similar in appearance in a lady about this woman's time of life, end in frightful cancer, apparently from an endeavour to remove it by escharotics.

We meet with various other growths in the external meatus and auditory tube, independent of polypus or other morbid products, resulting from inflammation or its consequences. One of the most frequent of these is exostosis, of which I have seen very many examples. The projection generally grows from the posterior edge of the osseous portion of the tube, and slowly, but gradually projects forwards, so as to leave but a slight crescent-shaped fissure between it and the anterior wall of the meatus. The integuments covering such growth are generally very smooth, white, and polished. I have never seen this disease affect both ears, but I have often remarked it in connexion with inflammatory affections both of the external tube and the membrana tympani. Autenrieth has given an account of one of these growths, and lately Mr. Toynbee communicated a valuable paper on the subject to the 'Provincial Medical and Surgical Jonrnal.' We had lately at the hospital a young woman in whom the external meatus was closed by a dense membrane, through which, when an incision was made, a probe introduced into the wound came in contact with the bone. As the patient had never heard on that side, and had never suffered from any aural disease in infancy, as well as from the circumstance of there being no bony meatus, we must consider that case as one of congenital defect, of which there are several similar examples on record. I have on two occasions, in private practice, seen a structure of the auditory tube at the junction of the membrano-cartilaginous and osseous portions, in one instance so small as only to admit the round extremity of an ordinary dressing probe. Hardened cerumen having accumulated behind it, it was with great difficulty removed.—*Med. Times and Gazette, May* 15, 1852, *p.* 487.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

132.—ON ARTIFICIAL DILATATION OF THE OS UTERI.

By Dr. S. W. J. Merriman.

[In a paper read before the Medical Society of London, Dr. Merriman,]

Conceiving that the true principles of midwifery have recently been assailed, gave, concisely, arguments from various sources, why it is improper to accede to the proposal to use the fingers as dilating agents in the first stages of tedious labours. No accoucheur can attain true celebrity, he said, who was unable to discriminate between the two principles of action—viz., when to leave the case entirely to nature, and when to render aid. He first referred to the opinions of ancient and most modern writers, who all advocate this plan of treatment by manual dilatation, and stated that their habit of speaking of the os externum vaginæ as the os uteri, and their belief that the child by its own efforts conduced to the opening of a passage for itself, rendered their advice useful only as a matter of history, not as a rule of practice for the present day. He expressed his surprise at finding such recommendations brought forward at the present time, the reasoning on which the advice was founded being so completely at variance with what we know to be the real state of the case. He then proceeded to the writings of accoucheurs published 108 years ago, and stated that the same advice was found in them, coupled with much else that is now obsolete, because injurious. The learned Smellie, who did so much for the practice of midwifery, was instanced as having gravely recommended and practised dilatation of the os externum by the hand formed into a conical shape, in order that he might pass his hand flat between the head of the fœtus and the os uteri, believing that to be the best way of preventing "the os uteri being pushed before the head of the child." That such advice should be followed, or even referred to as evidence of the applicability of the practice, was inconceivable, especially when coupled, as it is, with recommendations to press back the os coccygis to make room; the principle of Smellie's usual conduct being to do as much as possible himself, and to leave very little to nature. Passing on to modern authors, he showed that Burns expresses his belief that the first stage of labour, or the complete obliteration of the os uteri, should be accomplished in a certain time; and that Dr. James Hamilton limited the time to twelve or fourteen hours of constantly-recurring pains, and recommended artificial dilatation by the fingers if the complete opening of the os were likely to be delayed beyond that time. This brought us to a reason alleged which could be fairly considered—viz., that danger naturally accrues if the labour last many hours—over twenty-four hours, for example—the term usually assigned to a natural labour. This doctrine he controverted in the following manner. Allowing that Professor Simpson's analysis of Dr. Collins's tables shows that danger to life does increase as the duration of labour is prolonged, he did not consider that danger of much moment, compared with the very great majority of perfectly natural labours of short duration; the question being rather, whether dilatation by the finger does not produce as much injury as the prolongation of the labour would. He brought forward the following statistics from Dr. Collins, that out of 15,850 labours of all kinds, the period of which was noted, 13,412 were over within six hours; 1672 additional within twelve hours: and only 766 were prolonged to twenty four hours; the total mortality being 158. Dr. Joseph Clark, of Dublin, attended at 3878 births, in his private practice, and lost none from the effects of protracted labour. In his hospital practice he enumerates 9748 ordinary labours over within twenty-four hours, with 71 deaths, and only

183 similar cases prolonged beyond that time, 37 of whom died; but 49 had required craniotomy to be performed, the head being impacted. The author says, "We have therefore very strong reasons for being in no hurry to hasten the progress of labours, seeing how very large a majority terminate speedily, and how trifling the mortality is from the mere length of time occupied." Pressure by the fingers could not, it was shown, act on the os uteri like the bag of waters, or the head when moulded into a lengthened shape. There could be no reciprocal action between the force pressing upon the cervix and the power of the uterine structure to endure the pressure. The accoucheur cannot tell by the mere motion of his finger what amount of space there is for the head to occupy; and he will seldom succeed in keeping up the lip of the os, except in the last moments of a protracted first stage of labour. Fissures of the os uteri in labour, with enlargement and ulceration, so called, of the cervix, about which so much has lately been said, were briefly alluded to; the cause of these post-parturient complaints being considered a want of tone in the uterine vessels, contraction not duly taking place after labour, or, in other terms, there being a want of re-absorption of the enlarged uterine structure. The author considered that pressure on the os uteri in artificial dilatation must bruise the part, and render it unable to resume perfectly its pristine condition. The os is treated as if not possessed of sensibility; the sensibility to external objects may be slight, but the distribution of nerves of the organic class is abundant, and they cannot fail to receive injury, and so impede the return of the part to a healthy condition. The necessity of bleeding and tartar emetic to overcome congestion, where pressure has been exerted on the os uteri, pushed down before the head, was also briefly alluded to, as an argument against using artificial pressure in ordinary cases. The author proceeded as follows:—"The temptation to endeavour to hasten a slow labour where the patient resides at a distance, where the fee is small, and a sufficient income can only be got by incessant occupation among a number of patients, is too strong to be resisted; the smallest concession to the desire to afford manual assistance in some peculiar cases is certain to be extended to others, where the necessities of the practitioner are so many. We ought therefore to set our faces boldly against any proposals, the following of which is likely, almost certain I might say, to be injurious to the mother." Then suggesting that the "passing the finger gradually round the os uteri" may produce its effect in a secondary way, by enabling the accoucheur to regulate the mother's expenditure of force upon her uterine organs, by observing whether her powers are equal to the task, and giving nourishment or medicine as required, he concluded thus:—"I look upon labour as essentially a natural, healthy process, yet verging upon disease. The accoucheur's business is to preserve health, not to promote disease; he may hasten a labour by interference, but the interference of dilatation of the os uteri by the finger ought not to be made, except there is that amount of pressure on the anterior lip of the uterus which would soon bring on congestion if it were not moved out of the way."—*Lancet, June* 26, 1852, *p.* 616.

133.—ON UTERINE HEMORRHAGE.

By Dr. Murphy.

[In discussing the subject of uterine hemorrhage in his work on the Principles and Practice of Midwifery, Dr. Murphy enters into an elaborate detail of the uterine and placental circulation. He says:]

"On a question of so much difficulty, and one which has been so much misunderstood, I have preferred giving you the description of the best and most careful observers, rather than my own—to adopt their language as being least likely to be disputed. These quotations are sufficient to prove that there is a portion of the placenta in direct communication with the uterine vessels, which has been described by Weber as a rete of colossal capillaries; by John Hunter, as a cavernous structure; and by Goodsir, as a great cavity everywhere traversed and intersected by filamentous prolongations of the lining membranes of the uterine veins; that the maternal blood is impelled through innumerable uterine

arteries into the great cavernous cavity of the placenta, and, having supplied the necessary nutriment to the fœtal blood, flows back through the large oblique canals that communicate with, or are part of the uterine veins; that these venous canals and the cavernous structure are composed of a tissue of extreme delicacy; and lastly, that there is no direct communication between this maternal circulation of the placenta and that going forward in the fœtus. What, then, would be the effect if this vascular connexion between the placenta and the uterus were broken through?—if the placenta were partially separated from the uterus? From the nature of this injury the torn curling arteries might not pour out much blood. Any hemorrhage must arise chiefly from the broken veins, and not, recollect, from one, but *from both* of the divided extremities. There are thus two sources from which blood escapes—1st. From the openings that communicate with the rete of colossal capillaries, by which the cavernous structure is emptied of maternal blood, to be again filled by the uterine arteries. This may therefore be considered as arterial hemorrhage of the uterus through the placenta. 2nd. From the venous orifices on the surface of the uterus. The maternal blood flows from both extremities of the divided veins: in the former instance, in a direct current from the uterine arteries through the cavernous structure; in the latter, by regurgitation from the veins of the uterus. You can understand, therefore, not only the possibility but the certainty of the fact which the late Dr. Hamilton stated many years ago—which Professor Simpson has since, with so much ability, confirmed, but which still remains an enigma to perplex some writers on the subject—you can understand why, when the placenta is partially detached from the uterus, blood flows from its denuded surface, and that the exposed uterine veins (or sinuses, as they are called) are not the only sources of uterine hemorrhage. When that viscus is completely separated from the uterus, and its connexion with these arteries broken off, you can also perceive that blood will no longer flow from the surface, and the only blood that can be expressed from it is the residue lodged in the cavernous structure."

In cases of hemorrhage from *partial* detachment of the placenta, its arrest is to be looked for from the coagulation of blood in the cells of the cavernous structure, and the closure of the venous orifices by the agency of uterine contraction. When hemorrhage supervenes upon the *complete* detachment of the organ, its chief source is the venous openings of the uterus, and our object is to induce uterine contraction. By the aid of this, the semilunar or falciform projections, formed by the lining membrane of meeting veins, "are converted into valves, and where numerous short trunks intersect each other, the decussation of these valves completely closes the communication between the vessels." To this explanation of the arrest of hemorrhage it is objected that there may be relaxation of the uterus without hemorrhage during firm contraction. Dr. Murphy observes, in reply, that while hemorrhage *must* be the consequence of *complete* relaxation, it need not occur in the very common case of *partial* relaxation. This arises from (1), a slight degree of contraction sufficing to raise the falciform valves and partially to close the communication between the different trunks, and at least to retard the regurgitation of blood. (2.) "The current of the uterine circulation is altered in direction and in force. The arterial blood is no longer drawn towards the cavernous structure of the placenta, but flows into the intercommunicating branches in the parietes of the uterus. The current of the venous blood is directed much more rapidly towards the great central trunks of the abdomen, because these vessels are now relieved from the pressure of the gravid uterus, and by their expansion the venous blood is drawn more strongly from the terminal branches towards the central canals." (3.) The venous openings are frequently filled up by fragments of decidua, by broken tufts of fœtal vessels or small coagula, which act with sufficient power as plugs when the circulation is not directed strongly towards the uterine surface. As to the cases of hemorrhage occurring in spite of firm contraction, these may arise from retention of a portion of placenta, slight laceration of the os uteri, and analogous circumstances—cases which are clearly exceptional, and in nowise contradictory of the all-important axiom, that *contraction of the uterine fibres is the essential means of arresting uterine hemorrhage.—Med. Chirurgical Review, October*, 1852, *p.* 424.

134.—*Treatment of Unavoidable Hemorrhage.*—In treating *unavoidable hemorrhage*, attended with exhaustion, Dr. Murphy very much prefers having recourse to Dr. Simpson's plan of artificial separation of the placenta, to turning; and thinks this last operation is quite unjustifiable, on Smellie's plea that the woman must not die undelivered—the very attempt to prevent her doing so being, in fact, sometimes the cause of her death. His rules are thus summed up. (1.) In cases where no exhaustion has taken place, or where this is only commencing, the child should be turned and delivered the moment the os is sufficiently dilated or dilatable. When this is not so, the placenta should be compressed by the plug and by the discharge of the liquor amnii, and other means employed to prevent exhaustion, until delivery is practicable. (2.) In extreme exhaustion, turning should not be performed, but the placenta should be separated, and the child left undisturbed until decided re-action takes place. (3.) When the os is rigid, means should be employed to compress the placenta and increase the action of the uterus, so as to give time for dilatation and turning. Should exhausting hemorrhage, however, come on in the meantime, the placenta should be removed, rather than the hand be forced into the uterus. Adverting to some additional examples of spontaneous expulsion of the placenta taking place with advantage to the mother, Dr. Murphy observes:

"These cases are only small additions to a large number already recorded by Dr. Simpson, and several other practitioners, all proving that nature, of her own accord, sometimes succeeds in separating the placenta from the cervix, the effect of which is, the cessation of hemorrhage, and generally the recovery of the patient. We have seen, also, that even the child may escape under such unfavourable circumstances. If, then, it be true that the natural separation of the placenta arrests hemorrhage,—if it be consistent with our knowledge of the structure of the placenta and the utero-placental circulation that such should be the case,—and if turning the child is proved to be a most dangerous operation in cases attended with extreme exhaustion, is it not reasonable to think that the *artificial separation* of the placenta in these cases—a much less serious operation, a mere imitation of nature—would be a justifiable practice, and one that hardly merits the very severe castigations it has received? The objection may perhaps occur to you, if separation of the placenta be safer than turning, why not always do so? We would reply, that although safer for the mother, it is destructive to the child; and our practice must be guided by the same principles in this as in other obstetric operations; if it be possible to save both mother and child by turning, to do so; but if we have any doubt about the mother's safety, not to hesitate one moment because of the child. Some practitioners will not scruple to destroy the child with the perforator, when there is a doubt about the mother's safety. Why, then, should we hesitate, in the present instance, to sacrifice the child, if we are satisfied that the separation of the placenta will arrest the hemorrhage and save the mother, especially as by so doing we avoid exposing her to the shock of so dangerous an operation as turning in extreme exhaustion? It is no reply to this argument to say, that some women have been thus delivered in the last stage of exhaustion, and have escaped. I only ask you to examine, as I have done, the records of midwifery practice, to find the number who have not escaped, but who have lost their lives through this operation.—*Med. Chirurgical Review, October*, 1852, *p.* 426.

135.—*Case of Placenta Prævia.* By W. Bland, Esq., Sydney.—[The following is a letter from Mr. Bland, of Sydney, to Mr. George Bennett, describing the treatment he generally adopts in cases of this alarming and dangerous nature.]

In cases of placenta prævia my practice, for upwards of twenty-five years, has been as follows:—Without the least violence, but, at the same time, with the least possible delay (that is, as soon as the dilatation or dilatability of the os uteri would permit), to separate and extract the placenta—a hand-basin of warm water about 98°, having in the mean time been prepared immediately to receive it. By the first part of this measure the safety of the mother was secured; by the latter part of it the child. The following were, with me, the grounds of the

above prompt and decisive interference :—1st. The imminent danger of the case, which, if anything could be done, brooked no delay. 2nd. The conviction that the complete, early, and rapid, though cautious and gentle, separation of the placenta from the uterus, was the readiest and most certain means of allowing the placental vessels of the uterus to contract, and of thus at once arresting the hemorrhage, while, in furtherance of the same object, by the extraction of the bulky mass of the placenta, with the consequent complete evacuation of the waters, the utmost attainable contraction of the uterus itself could as promptly as possible be ensured; while, again, by the immediate immersion of the placenta on its extraction in the tepid bath prepared for it, the circulation between the fœtal portion of the placenta and the fœtus would be promoted and ensured during an ample period of time for the completion (whether by art or otherwise, and with or without the aid of medicine as the case might require) of the delivery of a living child.

I will only add, that whether the above theory be correct or not, the result of it in practice has far exceeded my most sanguine expectations.—*Lancet, Sept.* 4, 1852, *p.* 216.

[We still maintain that the separation of the placenta in these cases is unnecessary. Whenever the os uteri is sufficiently dilated to admit the hand, or even part of it, there can be little or no difficulty in turning the child and bringing it down to such a degree that compression of the placenta alone will be sufficient to prevent much hemorrhage. Delivery may, then, be accomplished the moment the os is fairly dilated.]

136.—ON THE RE-INVERSION OF THE UTERUS.

By Dr. S. W. J. Merriman, Lecturer on Clinical Midwifery at the Westminster Hospital, &c.

[Dr. Merriman refers to the discussion of Mr. Forbes' valuable paper on inversion of the uterus, read at the Royal Medical and Chirurgical Society, because he believes that in England no attempt has been made to reduce a chronic inversion of the womb with the assistance of chloroform. He presents the following case, however, where it has been successfully attempted in France. It is extracted from the 'Archives Générales de Médicine' for May last.

The subject of the paper was a young married woman, aged 24, who was confined of her second child on December 14, 1850. Her labour was natural, and lasted ten or twelve hours. The delivery of the placenta was painful, and of long duration, followed by an abundant hemorrhage, which yielded to cold compresses on the epigastrium. Three days afterwards, the patient felt a tumour come out of the vagina, as big as the head of a full-grown fœtus, and from this time she had frequently hemorrhage and leucorrhœas alternately. It was not till long afterwards that, the disease being recognised by a physician at Lyons, she was admitted under the care of M. Barrier, who ascertained her case to be as follows:—The patient could scarcely walk or stand upright; she had pains in the region of the kidneys, and a very great pain at the orifice of the vagina, with a sensation of bearing down and constipation; micturition was not difficult, the abdomen was natural, except a little pain on pressure, over the left ovary; she was very much reduced, and in a state of extreme chlorosis; she was often threatened with fainting when she stood upright. The hemorrhage had returned after a week's cessation, and was copious. On examination by the toucher, the finger scarcely entered the vagina before it felt a tumour in that canal, free below, and all around, but adhering to the further extremity of the vagina, by its upper portion. The tumour was pyriform, larger below than above—its size a little above that of the normal uterus: its surface was soft, velvety, and flocky,—tomenteuse, without either elevation or depression, and presenting no orifice. The upper part of the tumour formed a largish cylindrical pedicle, in continuity with the extremity of the vagina, and arising from it; only at the juncture of the two a circular elevation presented itself, over the whole of which the finger could pass, without being able to penetrate between it and the tumour, as happens in cases of polypus or incomplete inversion of the uterus. The tumour had the natural consistence of an uterus, being neither decidedly soft nor hard; it

was very moveable on its point of attachment; the vagina was large, but nowhere inverted. The orifice of the vagina was too small to allow of procidentia, after the protruding had been once pushed back. It was clearly a case of complete inversion of the uterus, although contained within the vagina, and consequently agreed with the first variety of the three forms recognised by authors, and especially by Boyer.

Convinced of the insufficiency of medicine to restore a patient so weakened by continual hemorrhage, M. Barrier decided at once to attempt the reduction of the inversion; and, having a little strengthened the patient by rest, quinine, and steel, he profited by a suspension of the hemorrhage to try to replace the uterus by a form of the taxis in the following manner:—"The patient being placed on her back, the hips brought to the edge of the bed, the thighs separated, and etherisation effected, M. Barrier introduced his hand into the vagina. To give the uterus as much fixedness as possible, he placed it in the hollow of his four fingers; then, by pressing with the ball of the thumb applied directly to the fundus uteri, the most dependent part, he pushed it back in the direction of the axis of the outlet, with the intention of placing the neck of the uterus against the sacrum, and of supporting the extremity of the vagina by a resisting medium, in order to guard against its rupture. After a few minutes of gentle but sustained pressure, the fundus uteri had entered into itself (*était rentré en lui même*) from two to three centimetres. The same pressure was still kept up for an instant, when, feeling the organ gradually give way, the operator passed his index and ring-fingers into the depression where his thumb had begun to lodge itself, as he pressed back the fundus uteri. With these two fingers he changed the direction of the force without increasing its amount; he then pushed back the fundus uteri from below upwards and from before backwards. Immediately the uterus yielded completely, and took again its natural position. All pressure being now abandoned, M. Barrier examined the state of the parts; by his hand placed on the hypogastrium, he felt the womb in its usual position; his fingers passed *per vaginam*, entered easily to a considerable depth into the dilated cervix, which, fully dilated, was continuous with the vagina, without any sensible line of demarcation. The reduction being effected, a vulcanised caoutchouc bag was placed in the vagina, and distended, in order to prevent a return of the malady, as also of the hemorrhage, which was feared. During the operation the patient lost only from twenty to thirty grammes of blood; and she recovered without accident, being completely cured." The paper was referred to MM. P. Dubois and Banyan, but their report has not yet been published.

The circumstantiality of this report precludes any idea of misconception; we have, therefore, before us a case of this hitherto incurable disease, perfectly cured, without apparently any alteration of structure which could prevent the parts from exercising their proper functions. We are not told how deeply the anæsthesia induced was, but it must have been very great, so completely to relax the rigidity of the uterine fibres as to allow of their being rolled one over the other. The intensity of the anæsthesia, and the liability to laceration, render the operation full of peril; yet the blessing of success is so inestimable, that I think we should be justified in attempting to effect the reduction, should a case present itself giving a mere chance of success. With a cool head and an experienced administrator of chloroform to assist, we may fairly make the trial, after the successful issue of the case related above.—*Med. Times and Gazette, Sept.* 4, 1852, *p.* 231.

137.—ON THE MEANING OF THE TERM 'ULCERATION,' AS AT PRESENT APPLIED TO UTERINE DISEASES.

By Dr. T. Snow Beck, F.R.S.

[Dr. Snow Beck first remarks upon the difference in the meaning of the term ulceration, when applied to diseases of the uterus, and when applied to any other parts of the body. He then quotes numerous authors who have given their explanations of the term. All of these, as Dr. Watson remarks, more or less restrict the term to those cases in which loss of substance occurs upon some surface, internal or external. He then proceeds:]

According to these definitions, to which many more might be added, the essential character of ulceration is a solution of continuity or excavation, or a loss of substance in a part; for it is evident, that the discharges which usually accompany this lesion are not characteristic of, nor essential to it, inasmuch as they are also products of simple inflammation of the mucous membrane. The accuracy of these definitions is confirmed by more recent observation of morbid phenomena by the aid of the microscope, which has shown, that, previous to ulceration taking place, the blood becomes stagnant, and adheres to the walls of the vessels, that the neighbouring tissues thus lose their vitality, by changes similar to what occur in mortification, and, being carried away by effused fluid, a solution of continuity, or loss of substance, is produced. To express this series of morbid changes in a short phrase, many pathologists define ulceration as "molecular death," or "molecular gangrene." But this does not in any way alter the essential character of the previous definitions; for, when "molecular death or gangrene" occurs in any tissue, "a solution of continuity, or loss of substance" in that tissue is the inevitable result.

Admitting, then, that these definitions correctly express the essential character of ulceration, we may inquire, whether this term has been applied with propriety to many morbid states of the orifice of the uterus. At the late discussion at the Royal Medical and Chirurgical Society, Dr. Murphy is reported to have said: "A girl was admitted into the hospital (University College) dying from the effects of opium. At the autopsy, he had examined the uterus, and found an ulcer on both lips extending into the cavity. It was seen by the pupils, and was sent to the curator to be preserved, but the next day it had lost all its characters, and was thrown aside." With all respect to Dr. Murphy's deservedly high standing in the profession, and the personal esteem which must be felt by all who know him personally, I can only come to the conclusion that some source of error must exist in this statement. A solution of continuity, or a loss of substance, on the lips of the uterus, would have been as readily recognised the day after the autopsy as on the day of the examination; and, if the supposed ulceration "had lost all its characters the next day," is it not certain that ulceration had not existed, and that some other morbid appearance had been mistaken for it? How could the loss of substance be repaired? And, if still present, it would have been recognised. I feel the greater confidence in speaking upon this subject, since I have carefully searched during some years for these reputed ulcerations in my own practice, and in the hospital practice of other physicians, without being enabled to discover them. During this period, I have seen many cases of inflammation of the mucous membrane covering the lips of the uterus, and even extending into the cervical canal, which presented a red and granular appearance, and which had been designated ulceration, but wherein no loss of substance or solution of continuity existed. Sometimes the glands in the mucous membrane were chiefly implicated in the inflammation, and each being surrounded by a defined circle of redness, they presented, when grouped together, a circumscribed and defined granular patch, studded with minute pits or holes, which led to the orifices of the glands. In these cases, the pathological condition did not differ from that of chronic inflammation in other mucous membranes, as, for example, in the granular condition of the conjunctiva; in the state of the mucous membrane of the stomach, to which the name of mammillation has been applied; in the condition sometimes observed in the urethra of the male after gonorrhœa, &c. In these instances, there is no loss of substance in the membranes, nor has any one contended that ulceration was present; yet this name has been applied to the same morbid conditions when observed in the mucous membrane of the vagina, or in that covering the lips of the uterus. With this explanation it can readily be understood, that an inflamed mucous membrane might lose its characteristic appearances the day after the autopsy, especially if it had been immersed in any fluid; but if a loss of substance or an ulcer had existed, that ulcer would have been as readily discovered the next day, as on the day on which the first examination was made.

The essential character of ulceration—that it is a solution of continuity or loss of substance in a tissue—has been sufficiently proved, and the pathological changes which occur have been also pointed out. In abrasion, or excoriation,

the epithelial covering of the mucous membrane is removed, but the substance of the membrane itself remains uninjured. There is no solution of continuity, or excavation, or loss of substance in the part, and this constitutes the essential difference between the two lesions—abrasion, or excoriation, and ulceration. The pathological changes which occur are equally distinct. In ulceration, the blood becomes stagnant, adheres to the sides of the vessels, the vitality of the part is destroyed, molecular death or gangrene being induced. In excoriation the blood flows on without interruption or stagnation; a portion of serum is effused beneath the unorganised epithelium, which being detached, is subsequently removed. The changes which occur may be compared to the effect of an exceedingly minute and mild blister, active in its character, acute in its course; whilst ulceration is the consequence of minute mortification, usually slow in its action, chronic in its course. The difference between the two lesions, and the pathological changes which occasion them, thus appear to be well defined; but there is one point of view from which the two might be confounded. The first change occurring in mucous membrane about to undergo minute gangrene is, in some cases, the effusion of bloody serum beneath the epithelium, and the subsequent desquamation of this part. And if we were to inquire no further into the changes going on, it might be concluded that, as there is desquamation of the epithelium, in the beginning of the process of ulceration, and also in excoriation, that hence the two states are pathologically identical. But this would be a very superficial mode of considering the question. In the changes which produce ulceration, desquamation of the epithelium is not the only alteration which takes place in the membrane; for, after its removal, the surface appears livid and dark-coloured, the tissues having lost their vitality, and the vessels of the part being blocked up, as in mortification. But in excoriation, the separation of the epithelium is the first and only change which occurs in the tissues of the membrane, which after its removal appears red and florid, the vessels being pervious, and the blood circulating through them. Excoriations, then, are the consequence of inflammation of the mucous membrane, or, as some have expressed, of catarrhal inflammation, more or less acute; ulcerations are the results of molecular gangrene, or mortification, the sequence of disease extending into the deeper tissues of the organ. Thus, even from this point of view, it would be illogical and erroneous to consider these two morbid conditions as pathologically identical.

The importance of this subject is greatly increased when considered in relation to the treatment of the diseases of the uterus. From many communications I have received, I have no doubt that the idea of having so loathsome a disease as "ulceration" on the uterus, has induced many females to submit to the employment of the speculum, and escharotics; while the same term has been considered by practitioners as a justification for this mode of treatment. It is thus intimately connected with the proper or improper use of the speculum, in the treatment of uterine disease. Where ulceration really exists, which is very rare, unless it be specific ulceration, the local application of escharotics by the aid of the speculum, during the later stages of the disease, is, no doubt, an useful adjunct to the other means of cure; but when excoriation only is present, or a reddened or swollen state of the mucous membrane, conditions which accompany inflammation more or less acute, the employment of these therapeutical agents is not only improper, but frequently most injurious.—*Med. Times and Gazette, May* 29 1852, *p.* 545.

138.—INTRA-UTERINE POLYPUS: DESCENT, AFTER DELIVERY, BEYOND THE VULVA; SPONTANEOUS CURE.

By Dr. Oldham.

[The following case occurred in the practice of Mr. Vidal, of Aveley, in Essex, with whom Dr. Oldham saw it in consultation.]

A middle-aged lady, whom Mr. Vidal had attended in six confinements, one of which was preternatural, was advanced to her full time in her seventh pregnancy in October, 1851. On the 4th October she complained of much pain, simulating labour-pain, for which Mr. Vidal, finding it to be of a spasmodic character, pre-

scribed some saline medicine with small doses of opium, which relieved it; and labour itself did not come on until the 17th of October. On examining after the membranes had ruptured, Mr. Vidal detected a transverse presentation, with the hand and arm in the vagina. He at once proceeded to turn the child, which was accomplished with considerable difficulty in two hours, the placenta soon following. The child was dead. He left her doing well; and his attention was drawn, on his first visit, to a large swelling bulging out beyond the vulva, which had gradually descended without any pain beyond what might be called after-pain, and no hemorrhage beyond the usual lochial hemorrhage. From the size, shape, and physical characters of this swelling, and its forming so soon after labour, Mr. Vidal concluded that it was an inverted uterus, and at once endeavoured to reduce it. He passed it within the vagina, but it soon protruded again, and other occasional endeavours to reduce it were attended with a like result. She was diligently kept in a horizontal posture; the bowels were relieved of a quantity of collected fæces; some saline medicines, and subsequently some tonic medicine, were administered with benefit, and she was allowed a sustaining diet. On the 27th of October I obeyed a summons from Mr. Vidal, and saw this patient with him. I found her rather pale and anxious, but quite free from that kind of distress which betokened any serious lesion. Her mind was tranquil, and ready in informing; her pulse quiet; skin cool; and tongue clean and moist. The only circumstance in her pregnancy which she had particularly noticed, but without complaining of it, was that the abdomen was "fuller and harder" than usual. Since her confinement she had not suffered much pain, and there had been an entire freedom from active hemorrhage. Placing her on the back and examining the abdomen, the uterus felt hard, large, with an inclination to the right side, reaching rather higher than the umbilicus, with an even convex outline, and free from tenderness; its size, solidity, and prominence were conspicuous, and around it the intestines were distinguished by percussion. Examining by the vagina, this canal was found to be largely distended by a smooth, globular, insensible tumour, which reached as low as the vulva, but without protruding beyond it. The fingers were passed at their fullest stretch both in front and behind this tumour without reaching the os uteri, and the tumour was found to pass in undiminished size into the interior of the uterus, where of course it could not be followed. At the posterior part, the surface of the tumour had contracted some feeble adhesions to the vagina, which readily gave way under the pressure of the finger, a trifling oozing of blood following the separation. On drawing aside the labia, the lower part of the tumour was readily seen and felt; it was highly vascular, covered by a smooth unbroken membrane, and to the touch it had not a very dense consistence. A quantity of thickish mucus, tinged with blood, but free from offensive smell, came away from the vagina.

My opinion respecting this case was, that a polypus had been developed in the interior of the uterus concurrently with gestation, that it had largely and directly participated in the developmental growth of the uterus, and that it had been partially expelled from the uterus after the separation of the placenta. As there was no urgent symptom, more particularly as there was no *hemorrhage*, I recommended that we should wait a month or five weeks to see how much it lessened with the reduction of the uterine structures; and during that time she should follow Mr. Vidal's plan, retaining the horizontal posture, taking good nourishment and mild tonics, with the occasional exhibition of aperient medicine, and habitual local washing.

Nov. 24, 1851.—I again visited this lady, and found her much improved in health and strength; since last I saw her she had gone on without a bad symptom; the abdomen had gradually reduced, she had been free from hemorrhage, and had but little discharge. The body of the uterus could still be felt above the pubes, and internally the polypus was found remarkably diminished. It was now in shape, size, and consistence like a tongue, with a broad uterine attachment. The os uteri was deeply fissured, soft and open. The shrunken polypus was, as before, insensible to the touch, and the general softness of its texture showed that it was not a fibrous tumour pediculated. Mr. Vidal and I were both struck with the rapid absorption which had taken place, and although I had come prepared to apply a ligature to the polypus, we both concurred that it was better to leave it alone yet longer, and see the extent of its spontaneous retrocession.

I have not seen this patient since, but Mr. Vidal writes to me (Feb. 20th, 1852), "On my last examination I found the tumour quite gone, and the discharge subsided; menstruation regular. She appears now in good health and spirits; good appetite; bowels free without medicine; and she walks and rides in the carriage without fatigue."

Remarks.—The complication of the growth of a uterine polypus with pregnancy may, in a practical point of view, be divided into two forms: 1. When the polypus, being attached to the cervix, is developed within the vagina, that is, all but its immediate pedicle, and *without* the uterus; and 2. When it grows *within* the womb, and is altogether concealed in the cavity. The first of these complications may give rise to hemorrhage during pregnancy; it may bring on abortion, and be the source of obstruction to delivery; and it is principally in this latter relation that it has been noticed in obstetric works. The danger of the second begins after parturition, when it may be the immediate cause of hemorrhage, or invert the womb when being expelled from its cavity, or form a tumour so much resembling an inverted uterus as to be mistaken and treated for it.

Whenever pregnancy occurs with a uterine polypus, the latter, whatever may be its structural peculiarity, and to whatever part of the uterus it may be attached, grows with an increased rapidity, its blood-vessels and proper tissue enlarging with the development of the uterine walls and blood-vessels. This is the case even when the polypus is a fibrous tumour with its cortex and pedicle only of uterine tissue, but it is particularly the case when the polypus is, as I take it to have been in the case above related, a more direct outgrowth from the womb. It is this tendency to rapid growth, and to the formation of an important complication of pregnancy, which ought to determine the removal of small polypi whenever they are detected in females not past the child-bearing season, although they may not have been attended with hemorrhage or any pressing symptom.

The management of a polypus springing from the uterus, but hanging in the vagina *during pregnancy*, must depend upon its size and the attendant symptoms. If the polypus be detected at an early period of pregnancy, of moderate size, with a thin stem, especially if it be accompanied with hemorrhage and muco-purulent discharge, it may be removed by torsion. Such a polypus may be twisted off with very little, if any disturbance to the uterus, and it is most desirable to get rid of an increasing and dangerous evil by so simple an operation. The following case illustrates this form.

I was requested to see a lady in the early part of 1851, who had been married nearly five months. She menstruated once after her marriage, and was at the time I saw her between three and four months gone in pregnancy. Since her supposed pregnancy she had been troubled with frequent small bleedings, so that she was rarely clear for two days together, and lately they had become more constant, especially after any exertion or sexual coitus, which had alarmed her, and created some doubt of her being pregnant. She was not anæmiated by the bleedings, and her general health was good, her pregnancy quite clear; but growing from the anterior wall of the cervix uteri, by a thin pedicle, was a highly vascular polypus, in size and shape something like an Orleans plum, which had obviously been the source of her bleeding. She was kept in the horizontal posture for two days, a slight aperient was given, and, having passed a speculum, so as to enclose the polypus, I carefully twisted it off with a pair of forceps which I habitually use for the purpose. An unimportant bleeding followed, which was left to stop spontaneously, and she recovered without further trouble; she was kept at rest for a week afterwards, and has since been safely confined.

But although a polypus may thus be removed by torsion without exciting abortion or any other morbid result, yet I regard the dangers which are likely to follow the detachment of a larger growth, with a thick stem, by ligature, which would be the only practicable operation, as very great, and such as ought to deter us from undertaking it, unless the dangers from its remaining until after delivery are such as to justify a great hazard to overcome them. The large development of the venous system of the uterus, which is directly continuous with the veins of the polypus, exposes the veins themselves to inflammation in the course of the separation of the polypus, or to the direct absorption of putrescent matter. Add to

these the imminent hazard of abortion, and it will be readily allowed that a patient is exposed to the most perilous diseases from such an operation.

[Dr. Oldham, in illustration of these remarks, relates the following case:—

The patient, aged 26, mother of one child, was suddenly seized with profuse bleeding from the uterus. This continued for eight or ten days. On examination, a polypus was found the size of a small apple growing from the anterior lip of the os uteri, by a thickish pedicle. A ligature was applied, and in two days the polypus separated. No idea of pregnancy had been entertained when the ligature was applied. Very incautiously, the patient got up and moved about the room; pains came on, and an ovum was expelled of about six weeks' development; symptoms of phlebitic metro-peritonitis ensued, and in spite of all treatment she died four days after the abortion. Dr. Oldham observes that there are several points deserving attention, where the polypus has been enclosed in the uterine cavity, and grown with the progress of gestation.]

Polypi thus placed may acquire during pregnancy, a very large size. They grow very rapidly, and become as big as a large melon or cocoa-nut. This was the case in the instance above related, and also in a specimen which I placed some time since in the Museum of Guy's Hospital, the particulars of which are detailed in the second volume of the 'Hospital Reports.' In this specimen the mass of the polypus was made up of fibres in every respect the same as the muscular fibres of the uterus, loosely conjoined, and freely permeated with arteries and veins, the latter in their section resembling the uterine veins. It had been, in short, a growth from the womb, and directly participated in the enlargement of its elementary structures and the volume of its circulation. The polypus in the case above related, I believe closely resembled the preparation now referred to, and, like it, was a direct outgrowth from the womb, without any portion of a fibrous tumour, which would not have been absorbed.

A polypus acquiring so great a magnitude gives no sign of its presence during gestation, beyond the fact of the uterus being larger and harder. Mr. Vidal's patient *felt* "fuller and harder" in this than in her former pregnancies; but there is nothing in the volume of the polypus, with its gradual growth, so to distend the uterine cavity as to incommode the patient, or render pregnancy more painful, or excite a premature labour.

In Mr. Vidal's case there was a transverse presentation, and it may perhaps be assumed that this was caused by the presence of the polypus, although other recorded cases have not been attended with any such complication. Still a large solid inert mass within the cavity of the womb might well divert the force of the first contractions of the uterus from their even bearing on the fœtal ovoid, which is necessary to secure its vertical position. To turn the child under such circumstances appears to have been attended with unusual difficulty.

It is not, however, until after the placenta is separated, that the existence of some complication becomes apparent. The uterus, after the birth of the child, may have been felt to be large, but not so large as to suggest the idea of twins. Experienced accoucheurs, such as Mr. Vidal, have not had their attention *arrested* at this stage. A bulky placenta with thick uterine walls, will leave often a large uterine tumour after the birth of the child, but the third stage goes on well, the placenta is separated, passes into the vagina, and is withdrawn without difficulty, and without excessive bleeding. When a large polypus is still within the womb after parturition, the uterus will probably at first close over it, retaining it in its cavity, and the hand passed over the abdomen in the usual way will detect the great volume and general solidity of the uterus. If the uterus be left alone, and not excited by attempts to explore its cavity, it may be expected, in time, varying in duration, to expel the polypus into the vagina, or beyond it, according to the size of the polypus, and the degree of mobility of its pedicle. This process may be accomplished, as in the case related, without much suffering, and without hemorrhage, or as in other cases, with exhausting uterine efforts and copious bleeding, in the course of which it is just possible that the polypus may be separated from its uterine attachment.

The treatment of this complication is well illustrated in the case. It was based on non-interference, and the more completely this is carried out from first to last, the greater likelihood is there of a favourable result. When the uterus remains

unusually bulky after delivery, leading to the conviction that it contains some solid body, and from the absence of the fœtal membranes and fœtal heart, that it is not another ovum, it is far better to leave the uterus alone, than to introduce the hand to try to make out exactly what it is, or to endeavour to arouse the action of the uterus by ergot of rye, or any local irritation, with the hope of expelling it. As long as the uterus is tonically contracted, it may be very large, without any hemorrhage from its veins, and, as long as the polypus is undisturbed, there is comparatively little danger, with its rapidly diminishing circulation, that *it* will bleed. If, however, attempts have been made to draw it from the uterus, or the uterus has been in any way irritated, there is then much danger of additional complication, either from hemorrhage, as the result of irregular uterine contraction, or a partial laceration of the pedicle of the polypus, or from the exhaustion of long-continued uterine efforts, or from both combined. The danger, too, of inversion of the uterus is not remote. The safety of the patient consists in the quiescence of the uterus, and the non-disturbance of the polypus, and the present case shows not only that its volume may diminish, but that a very large tumour may be absolutely effaced. Every effort ought to be made from the commencement, by strict rest, mild sedatives, and the avoidance of all local irritation, to secure this end. It may be, however, that in spite of our best exertions, formidable hemorrhage and acute suffering may accompany the partial expulsion of the polypus, and its removal may be urgently required. When this is the case the polypus may be twisted off if its pedicle be small, but if driven to the performance of any operation at a time when physical injury to the uterus must be looked upon as hazardous, I should prefer to apply a ligature around the pedicle to prevent hemorrhage, and then remove with the knife the body of the polypus.—*Guy's Hospital Reports, Vol.* 8, *part* 1, *p.* 69.

ADDENDA.

139.—EXTERNAL USE OF CHLOROFORM.

By Dr. Channing.

[Chloroform externally is exceedingly useful in allaying local pains; in some cases the pain does not return. Applied locally, it acts as an anæsthetic, rendering the part perfectly insensible to the violence done to it. Dr. Channing relates a case of uterine disturbance attended by severe pain both in and about the pelvis, and also pain in the spine. The former symptom was relieved by lying down, but the dorsal pain remained as bad as ever. He says:]

For this I recommended the external application of chloroform over the whole course of the spine which was involved in the disease. The effect was immediate and complete. I saw this patient a few days since, November, 1851, and found her well in regard to the back, and speaking of herself as very well in all respects.

In this case the pain in the spine was doubtless the result of the reflex function, the womb being the original seat of the malady. But when the uterine affection was relieved, the sympathetic dorsal difficulty remained, and only yielded to the use of chloroform. The quantity used was an ounce.

Case 2. Mr. ——, aged 22. A very feeble man in appearance; very thin in flesh; pale, and an almost constant sufferer from headache. This pain occupied but a small part of the head arc, and most frequently the right temporal region. It was accompanied by constant nausea, frequent vomiting, great prostration of strength, and demanding for its present relief firm pressure over the part affected.

In the last attack, which happened a few weeks since, I applied chloroform to the seat of pain. A few drops were applied by means of a handkerchief. The immediate effect was redness of the skin and a tingling sensation in the spot. The pain was at once relieved. He raised his head from a friend's shoulder, opened his eyes, looked round, and expressed his utter surprise and deep pleasure at the entire relief which had followed the use of such apparently simple means. He called on me the next morning, and reported himself perfectly well. I have not been called to him since.

The relief in this case was *sudden* in its occurrence, as it had been in others. It has not been less permanent on that account, or in such cases. It has acted at once to remove pain, and with a rapidity which distinguishes the relief entirely from that which follows etherization by inhalation. The brain does not seem to have anything to do with the matter. Local pain is abolished, and at once; and the nerves have no story of suffering to tell to the brain. The sentinel is at his post, but his function is not needed. The part does not lose its natural sensibility at all. On the contrary, it feels the tingling, the irritation of the chloroform, just as distinctly as at first. Nothing has been lost of natural power and healthful functions. All that has happened is this: the pain has ceased, and the patient is well.

Case 3. 1851. Mrs. ——, aged 36. Has long suffered from uterine disturbance. The most exhausting and annoying symptom was leucorrhœa. This was a perpetual drain, and made her exceedingly uncomfortable. I was occasionally consulted in this case; but, as her general health continued tolerably firm, no systematic attempt at recovery was thought necessary by the patient. She became pregnant, and supposed herself between two and three months advanced in that state, when hemorrhage and severe uterine pain occurred, on account of which I was desired to see her. She had lost a great deal of blood before I saw her. I found her perfectly blanched—lips and whole face; skin cold; hands bloodless; faint; almost pulseless. Various means were used, and the hemorrhage was stopped. I considered her case, however, so pressing, that I passed the whole day in the house. She now began to complain of a pain in the back. This had exacer-

bations in the night, becoming too severe to allow of sleep, and continuing for three or four hours without mitigation. For this I recommended chloroform, which was applied by means of a handkerchief, and with excellent results. After three applications, on as many days or nights, the pain ceased, and has not now, at the end of some weeks, returned.

Case 4. Mrs. ——, about 40. Last child, thirteen years old. I was called in consultation in this case, because of vomiting, attending pregnancy, all of about three months' standing. The vomiting ceased under treatment, and food was taken in sufficient quantities, and was well borne by the stomach. A comatose state supervened, which increased, with entire aberration of mind, and death was its consequence. The termination of cases of fatal vomiting by coma has occurred in many instances which have come under my notice or knowledge. I do not, however, recollect a case in which apparent recovery has been followed by coma ending in death.

This case is reported here, because of the use of chloroform for one of its symptoms. This was pain in the back, in the course of the spine. It was very severe, taking the lead, in distress, of all the rest. For this pain I prescribed an ointment, if so liquid a substance as was produced by the union of lard and chloroform deserves the name. It was applied twice or thrice a day, and with most excellent effects, the pain entirely disappearing. It was used in the same way in the first of these cases.

Case 5. Mrs. ——. Has had four premature labours; the first at about five months, the fourth at about the eighth. They were all still-born, or neither of them lived over an hour or two. The fifth pregnancy was terminated at the full time by the birth of a living, healthful male child, on the 17th October, 1851. I visited her for the usual time after delivery, and left her in rapid progress towards perfect recovery. I was called to see her on the 27th October, and found her apparently very ill. Pulse rapid; skin hot; face flushed: much pain in the head and in both breasts, making all attempts at nursing absolutely agonizing. A thick eruption had appeared over the whole chest. Upon examination, the breasts were found exquisitely sensitive, not bearing pressure at all. Sufficient pressure, however, was made to enable me to ascertain that there was no unusual hardness, or, in short, any other sign of disease in either organ. The pain was confined to the skin, and seemed to involve its whole tissue. The eruption proved to be a very full crop of sudamina of unusual size, resembling exactly an exaggerated form of the same kind of eruption in typhoid fever. Various means had been used before my visit, but without any good effect.

I recommended chloroform, and with the best effects. I regret I had not used it in combination with lard or rose ointment, both of which I have used, and for the reason that it may be more extensively applied, with more continuous benefit, and with less of the unpleasant tingling which so generally accompanies the uncombined substance.

On what did this aching pain depend? It resembled that which at times makes *shingles* so very distressing. Was it owing to the eruption? I have never known the skin in sudamina to be complained of as the seat of pain, and I have examined it when covered with this eruption after a manner to have produced pain had morbid sensibility existed. In Mrs. ——'s case, the pain was persistent, being much aggravated by handling, though never so gently. The pain in this case subsided, under the use of chloroform, long before the eruption disappeared.

Case 6. Mrs. ——, aged 25, married very young, and had a premature labour within a year or two afterwards. I was desired to see her, October, 1851, on account of an enlargement of the abdomen, on the left side, and for various signs of ill health. The tumour was found to be an excessively enlarged spleen. It filled the left hypochondrium, extending forward to the epigastrium, and downward to Poupart's ligament. Its anterior boundary was the linea alba. From this point or line it extended laterally and backward, filling accurately one whole side of the abdomen. She had been always regular in regard to the catamenial function, with the exception of the last two periods. Nausea, vomiting, and other unusual and disagreeable feelings had led to a suspicion that pregnancy may exist. She had recently taken a fatiguing journey for three days, and has suffered much since. The pain has been most troublesome in the head, and in the seat of the tumour. Diarrhœa and flatulence, with general anasarca, involving the face and

the head, are also present. Chloroform to the forehead and the seat of the tumour has given her much comfort, more than has been derived from any other means used.

Case 7. Mrs. —— was delivered of her second child, a daughter, December 25, 1850. Since that event she has been liable to diarrhœa, which, however, has not impaired her general health. She has long been annoyed by a spasmodic catching of her breath, almost resembling hiccup, but producing more general agitation of the body than that does. After her last confinement, this affection was for some time unusually troublesome.

I was called to see Mrs. ——, October 6th, 1851, and found her apparently very ill. She was hot; feverish; pulse rapid; severe pain in head, which it was attempted to relieve by bandage and different washes; vomiting large quantities of watery fluid, colourless, having floating in it masses of a dense, white substance, resembling coagulated milk. No milk has been taken for some time. Copious diarrhœa, with very severe, intermitting pain around the umbilicus. No sleep at night, and for a week or more has suffered many of present symptoms. Means were used to check vomiting and diarrhœa, but without any useful result, and I determined to try chloroform externally. Its effect was most grateful. The head, stomach, and bowels, became easy. They were, in short, relieved of all their trouble. This was in the evening. At my morning visit, I found Mrs. —— up and dressed, nursing her child; and, except weakness from so much suffering, and forced total abstinence, in her usual health. I forgot to mention above, that, during this very severe attack, the catching respiration revived, as it does, I was informed, whenever she is at all indisposed, and continued till she recovered.

Case 8. Mr. ——, of strongly-marked nervous temperament; very *impressible;* an excellent mesmeric subject. I was called to this gentleman on account of violent pain in the head, and to which he was very liable. I found him in bed. He could not sit up at all, and any noise in the room, or house, or jarring of the furniture, increased the pain to agony. Pressure to the head gave some relief. While I was examining his case, he said he could bear his sufferings no longer; that he must get up, and walk round the room; do anything which might afford some relief. He was hot; skin dry; pulse rapid. I sent for leeches; but before they could be got, and because of the increased suffering, I made a free application of sulphuric ether to the forehead. The relief from its use was soon apparent. It was strongly expressed, until, worn out by his long agony and sleeplessness—and now relieved—he fell asleep; and, after long and perfectly quiet rest, awoke without pain, and next day went to his business.

The relief here was quite as striking as that from chloroform. A good deal of ether was used, and, indeed, the patient may have found some of the relief he experienced in the unavoidable inhalation of the ether vapour. This was not at all the case in the instances in which chloroform was applied. The quantity was very small, hardly damping the handkerchief beyond the limits of a twenty-five cent piece, and with the wet surface close to the skin, and often under the bed and other clothes. This case is reported, not on its own account only, but also to allude to another mode of employing local etherization. A professional friend of the highest reputation amongst us, and very cautious in forming opinions concerning the direct effects of remedies, once told the writer that he had been much gratified with the agency of sulphuric ether in procuring sleep in cases in which he was desirous to avoid the employment of opiates. His method was to have the forehead and face gently wiped with a cloth damped with sulphuric ether, and very often most grateful sleep followed this use of it.

Case 9. Mrs. ——, aged 19, in seventh month of pregnancy. Of excellent health before marriage, she has suffered, in an unusually severe form, the signs and diseases of pregnancy. Vomiting occurred very early, and such was its excess that it seemed impossible that she could live through its ordinary continuance. To this succeeded ptyalism, which has been quite as uninterrupted and severe as was the vomiting. She is constantly in bed, having no power to sit up. Violent headaches; pain in abdomen; in back; in short, pain occurring in all possible localities, has made her life for months wretched. Having tried the ordinary means of diminishing these troubles, I have at length applied chloroform. The pain in the head has entirely ceased since she began this course. All other means are omitted.

Pains elsewhere are sensibly diminished. She has no nausea, no vomiting, and the ptyalism is less. She bears milk, in small quantities, quite well on the stomach. As the pain on the back and abdomen continues to recur when the effects of the chloroform have passed away, I have to-day, November 10, 1851, directed an ointment of chloroform, two drachms to an ounce of lard, to be applied to the spine and the epigastric region.

Case 10. This case occurred in the person of the writer. The disease was toothache. It was in one of its severest forms; had continued many hours; extended to the temples and lower jaw, and made the least application to it, a touch merely, exquisitely painful. Chloroform on a handkerchief was applied to the third branch of the fifth pair, where it passes out upon the face, and to its ramifications, and especially to that part of the cheek which was over the diseased tooth. The usual sense of tingling and burning was experienced, and the skin became slightly red. After a few minutes, a most grateful sense of relief was experienced. The pain disappeared as entirely as it does after an aching tooth has been drawn. No tenderness remained. The tongue or finger could be freely pressed against the tooth, and without producing any uneasiness. Chewing was possible and grateful. Cold water gave no agony. It may be inferred that I have exaggerated the suffering. Said a patient to me once, to whom I had suggested the idea that she might be in error as to her suffering, "*Sir, I know by my feelings how I feel.*" I can say that what I have said of the pain, and the relief from chloroform, need not be questioned. I felt and understood both.

Relief continued for some time. Pain recurred, but it was at once treated as above, and at once relieved.

Of the mode of applying chloroform endermically, a word. A handkerchief fresh from the drawer, and a phial of chloroform are all that is needed. Apply the handkerchief to the open mouth of the phial, and invert the latter so that the chloroform may wet a spot in the centre of the cloth. Do this two or three times, and then apply it to the seat of pain by moderate pressure and without friction. Let it remain until it is dry, and then wet and apply it again if need be. Ordinarily, the pain soon becomes less, and will even be found often to disappear entirely with no further application of chloroform. Some redness is commonly produced, and some tingling or smarting. These, however, disappear when the handkerchief is removed. To prevent evaporation, and especially to prevent inspiration of the chloroform, always cover the cloth which contains it with another dry one.—*American Journal of Med. Sciences, April*, 1852, *p.* 353.

140.—*Chloroform in Operations.*—[Mr. Le Gros Clark gives, in a letter to the editor of 'the Lancet,' the following practical hints on the administration of chloroform. He says:]

I have been in the habit of using chloroform freely, but not indiscriminately, in operations; and have for a long time adopted the following precaution in its exhibition.—Assuming as a general principle that sensation and a conscious exercise of volition are simultaneously suspended, I direct my patient to make some voluntary effort, such as raising his hand, or squeezing that of an assistant, —giving him to understand, that directly he ceases to do so at command, the operation will be commenced. The patient readily enters into this arrangement, and never fails of efficiently executing his part. If the operation be brief, it is unnecessary to continue or repeat the inhalation; but if protracted, this state of complete or almost entire insensibility to pain may easily be maintained by even an unpractised assistant.

The obvious advantage of this plan (which doubtless has been acted upon by others besides myself), is that of affording a sure and very simple criterion by which to judge of what is a sufficient dose of the anæsthetic. The effect is attained without risk, though I admit that patients are sometimes less docile than where the nervous system is more entirely under the influence of the free and prolonged exhibition of chloroform. I have never known it to produce sickness during its inhalation in this moderate quantity, and but rarely even

nausea or headache afterwards—a point of no trifling importance, where the operation is serious.

The effect of chloroform on the system appears to be very analogous to, if not absolutely identical with, that of alcoholic drinks taken into the stomach, the intoxication being more transient when produced by the inhalation of the vapour. I believe that we may thus account for the occasional shrinking of patients, and their expressions of suffering under operations when they afterwards declare that they have experienced no pain. They do feel, probably but slightly, yet forget all about it, as the drunken subject of a severe accident wonders where he is, and what has happened, when he finds himself, on recovering his consciousness, within the walls of an hospital. As an overdose of alcohol is not a desirable introduction to the treatment of a grave accident, so I think we should be specially cautious in the administration of chloroform when about to perform a serious operation. I do not regard the shock which the physical frame sustains from the infliction of pain, as, *per se*, of very material importance; I do not mean to undervalue the boon on this account; but I more highly estimate the moral relief which the anticipation of undergoing a painless operation affords. Patients who have not felt the knife certainly complain more afterwards of the wound inflicted. Probably this is explained by the relative intensity of the suffering, as experienced during and after an operation by those who have not had chloroform.

Mr. Carpenter, house-surgeon to St. Thomas's Hospital, who has been in the habit of superintending the administration of chloroform in our operating theatre, informs me that the indications afforded by the pulse, respiration, and state of the pupil, entirely coincide with the simpler test which I have referred to. Mr. Carpenter adds that he considers there is no risk, so long as the pulse and respiration retain their natural relation to each other in point of frequency, even though both be accelerated; but he regards an increasing rapidity of pulse accompanied by diminished frequency of respiration, as an unequivocal indication that the administration of the chloroform should be immediately suspended.

An instrument such as that manufactured by Mr. Bigg, is simple and efficient. It is provided with two india-rubber discs, which act as valves in an opposite direction. The inspired air is thus freely admitted over the moistened sponge by one aperture, and the expired air is expelled by the other.

From one to two drachms I have usually found sufficient to effect the required purpose; but this, it is well known, varies extremely in different individuals. In one case under my care, complete insensibility was produced almost instantaneously. The patient was partially under the influence of a very moderate opiate, which perhaps rendered him more susceptible of the agency of the chloroform. If this be so, might not the combination be desirable under some circumstances?—*Lancet, May* 29, 1852, *p.* 531.

141.—*On Calomel and Soda as a Cathartic.* By Dr. Hunt.—Dr. Hunt draws attention in this paper to the remarkable increase of purgative power which calomel acquires by the addition of bicarbonate of soda. So small a dose as two grains, combined with from ten to twenty of soda, acts most efficiently, without inducing the griping stools which calomel does when given alone. After the bowels and liver have been well acted upon, the medicine loses its power, and should be discontinued. Dr. Hunt believes that the soda exerts some power in preventing the mercury acting upon the gums.—*Boston Journal.—British and Foreign Med. Chirurgical Review, Oct.*, 1852, *p.* 555.

142.—*Turpentine in Collapse.*—By Charles W. Whitby, Esq., Surgeon, Ottery St. Mary. [Mr. Whitby relates the following case of collapse occurring in a case of measles. The patient was a little boy about three and a half years old. He says:]

On putting my ear to his chest, the air entered both lungs, but crepitation was most diffuse throughout them, and towards the base of the lower lobes it entered

but faintly. Under these circumstances, wishing, if possible, to clear the bronchi from secretion, and yet fearing the lowering effect of any emetic alone, I was induced to combine with two drachms of ipecacuanha wine about forty mimims of sp. terebinthinæ, having very lately seen the powerful manner in which this medicine acts in rousing parturient females when almost dead from hemorrhage. I also gave the child a mixture, consisting of vinegar, ammonia, and squill, and ordered brandy in small quantities. But the action of the ipecacuanha and turpentine was most surprising; the child seemed to rally immediately, vomited, and was much relieved. The next morning it was better, but towards the afternoon seemed to be relapsing into its former state. I then again administered the turpentine, with the same effect, and from that period he has gradually progressed to convalescence,—no strangury or unpleasant symptom followed the use of the medicine.—*Med. Times and Gazette, July* 3, 1852, *p.* 21.

143.—*On the Employment of Manganese.* By MM. Petrequin and Burin.—In this paper M. Petrequin brings forward additional evidence of the greatly increased efficacy which the combination of manganese with iron confers upon the latter metal. M. Burin has recently had a memoir which he presented to the Academy, upon the condition in which manganese exists in the blood, very favourably reported upon by M. Lecanu. According to M. Burin's analysis, 1000 grammes of blood are thus constituted as regards this substance.

	Weight of Globules.	Oxide of Iron.	Oxide of Manganese.
Plethoric man . . .	143·500 . . .	1·360 . . .	0·071
Normal blood . . .	128·200 . . .	1·220 . . .	0·060
Chlorotic girl . . .	63·980 . . .	0·500 . . .	0·025

M. Burin has furnished several formulæ for *ferro-manganese* salts, which are now obtainable in Paris, and are as easily administered as is iron alone,—their only drawback being their high price.

This metal being as much a normal ingredient in the blood as is the iron, its administration is indicated in chlorosis and other cases, in which both substances are in deficient quantity; and M. Petrequin believes that the resistance which many of these cases offer to iron, and their frequent relapse, may be obviated by this addition, by the use of which also a smaller quantity of iron is made to suffice. He objects to the administration of this substance unaccompanied by the iron; and he regards the statement that sometimes the manganese, sometimes the iron, is deficient in quantity in the globules, as purely conjectural—the analysis showing thus far, that both substances are alike wanting. M. Petrequin has found these combined medicinal bodies especially useful in blood diseases, such as the chloro-anemia after hemorrhage, operations, metrorrhagia, &c. They are of remarkable efficacy in the chlorosis which appears about puberty, a malady which is far more common even among male adolescents than is supposed. It is also met with at the critical period of women, especially when passive hemorrhage prevails. Its efficacy is also remarkable in the anæmic cachexia following prolonged intermittent fever, as also attendant upon prolonged suppuration, and on strumous and cancerous disease. In the disordered states of the circulation met with in chloro-anæmia, which are sometimes mistaken for organic disease, the ferro-manganese preparations combined with digitalis or other substances, are of great utility. The various neuroses of the digestive organs, which complicate the chlorotic state, are frequently relieved; and in the disorders of the nervous system, from various descriptions of excesses, they are found highly useful.—*Bull. de Thérap.—British and Foreign Med. Chirurgical Review, July*, 1852, *p.* 274.

144.—*On Disguising the Taste of Quinine.* By M. Piorry.—A piece of chocolate should be half masticated, and retained between the cheeks and the teeth. The quinine draught is to be rapidly swallowed: and then the mastication of the chocolate is to be completed, so that it may be swallowed also. The taste of the

quinine is thus hardly perceived.—*Bull. de l'Académie.—British and Foreign Med. Chirurgical Review, July*, 1852, *p.* 276.

145.—*New Mode of taking Cod-liver Oil.*—By GEORGE SELWYN MORRIS, Esq., Wye, Kent.—[The vehicle which Mr. Morris has found most valuable for the administration of this disagreeable and generally nauseous remedy, is a weak infusion of quassia chips. He says:]—I have only found it fail once, and I have given it many times, merely floating the oil on a tablespoonful of the infusion; the quassia being a nice light tonic, the stomach cannot in any way be impaired by its use, especially in so small a dose. I was induced to try this remedy merely from the fact of a lady whom I was attending having (from a whim of her own) taken her oil floated upon a dose of quinine mixture, and being retained upon the stomach every time she had occasion to take it,—a circumstance which had never occurred before to her with any of the other measures adopted; and she is at the present time taking it in the same way with the most beneficial effect. Feeling, as I did, that the bitter extractive was the principal agent in allowing the oil to be retained, and feeling also, that the quinine might not be suitable in all cases where the oil would be (let alone the expense of the former), I adopted this *placebo*, and have every reason to be satisfied with the result.—*Med Times and Gazette, Sep.* 11, 1852, *p.* 271.

146.—*On a New Mode of Applying Leeches.*—By DR. C. F. SLOAN, Ayr.—[As it frequently happens that the leeches may be deficient in quality, Dr. Sloan has converted, by the following plan, very indifferent specimens into most efficient blood-suckers. He says:]

It struck me that, as leeches are remarkably influenced by atmospheric changes, it might be worth while trying the experiment of partially exhausting the air over them, and thus inducing the sensation of a low barometer. On covering them with a cupping glass, and by means of the air-pump producing a moderate degree of rarefaction, an immediate change in the style of sucking took place; the leeches displayed an activity I have rarely seen equalled by those of the best quality when applied in the usual way; they rapidly became fully distended, and fell off. By continuing the exhausting process afterwards, which is a common enough practice, a sufficient quantity of blood was readily obtained; and I remarked that the erysipelatous appearance, which usually followed leech-bites in this patient, was prevented.

It is quite possible that the increased activity under the exhausted cupping-glass may arise from the skin being rendered more vascular, and thus yielding its blood more readily; or we may even view the leech in these circumstances as an elastic sac, communicating with the circulation by a firm canula, so that the blood may flow into the animal without much exertion on its part; but whatever the cause, the result will be found satisfactory. I have never had occasion to try the effect of snipping off the tails of the animals under this plan, but possibly it would be eminently successful.

The operation is almost as quickly performed as cupping, and has this advantage, that it requires no dexterity. I think any nurse of ordinary intelligence might acquire the necessary skill in a single lesson.

In charitable institutions this plan would be especially advisable, as by it two leeches might be made, on the average, to do the work of three, thereby effecting a considerable saving, and the necessary apparatus would always be at hand. Nothing could be better for the purpose than those cupping instruments, in which the vacuum is produced by an air-pump. Increasing the vascularity of the skin by a cupping-glass previous to applying the leeches, seems to make them bite more readily, probably by rendering the odour of the blood more perceptible.—*Monthly Journal of Med. Science, Aug.* 1852, *p.* 126.

147.—ON ONYCHIA.

[Dr. MORIATY of Dieppe, says, that if a strong caustic, say the Vienna paste, is applied to the fungoid growth, at the edge of the nail, suppuration is quickly produced under the edge of the nail, by which its attachments become speedily loosened and it may be then easily removed.

M. W. TAGERT, Surgeon to Mercer's Hospital, Dublin, in a letter to the Editor of 'the Medical Times and Gazette,' refers to the opinion of Mr. A. Colles, formerly professor of surgery in the Royal College of Surgeons in Ireland. In a paper entitled 'Observations on some Morbid Affections of the Great Toe-Nail,']

He has described three different diseases to which this part is subject, viz.:—

1st. Fungous ulceration at the angle of junction between the anterior and external edge of the nail, commonly called "the nail growing into the flesh."

2ndly. Another morbid affection, seated at the anterior and inner edge of the great toe-nail, causing lameness and much pain on pressure. In this latter, the inner angle of the nail rests on a hard, white mass of laminated horny cuticle which can be readily picked out in bran-like scales, exposing a small cup-like cavity without ulceration. Mr. Colles has never seen this latter disease affect the outer angle, nor the former (the fungoid) affect the inner angle.

3rdly. He treats of onychia maligna depending on a morbid condition of the secreting matrix of the nail. He states that he has never known an instance where the fungous ulceration already alluded to has extended, so as to induce the onychia maligna.

We thus observe that these three affections have each their distinct and peculiar site, and never mingle or merge into each other.

I should now direct attention to the modes of treatment advised by Mr. Colles in these painful diseases.

I shall commence with the fungoid ulcer. After detailing the different modes of management adopted by Desault, Wardrop, Sir A. Cooper, Dupuytren, and Liston, and stating his objections to them, he says, a permanent cure can always be made by a very simple operation, and one comparatively free from pain, by excising only so much of the nail as is already detached from the matrix; "all of this portion, as well as that embedded in the fungus, must be removed."

For the excision of the detached portion of the nail, he employed the following instruments: a spatula, strong forceps with flat blades, a probe with a thin flat extremity, and a strong crooked scissors.

An assistant, with the spatula, presses down the fungus; the operator, with the forceps, seizes the edge of the portion of nail to be removed; the thin flat probe is now passed beneath the nail, and towards the outer edge, as far as it will go—this informs us to what extent the nail is detached—a blade of the strong crooked scissors, with sharp point, is passed under the nail as far as the probe went. With one stroke he cuts off the detached portion of nail, which is removed by the forceps. Should this attempt fail to remove it, pass the probe again, and re-introduce the scissors as high as they can be pushed. A second cut will complete the separation. The only dressing is a small bit of lint, which is to be pressed firmly between the fungus and the edge of the nail. In a few hours the pain is gone, and the patient can walk about in three or four days without uneasiness. The dressing need not be removed until the fourth day; another bit of lint is to be re-applied. In the course of ten or fifteen days the fungus will be gone, and the parts nearly restored.

Mr. Colles alludes to an occasional unpleasant occurrence, which I should not omit to notice. In four or five days after the operation, the patient complains of pain in the toe. On removing the dressing, a small portion of a whitish substance is seen rising up through the fungus. He regards this as a sort of accessary ungual filament, arising close to the original nail, from the anterior and outer border of its matrix, which is now altered in texture and direction. It is so soft that it readily tears and breaks. He directs us to seize it with the torsion forceps, and to excise with one cut of the scissors passed well beneath it. The lint dressing is to be re-applied, as before, and the case now proceeds favourably to a cure.

I may here remark, that I have on various occasions performed this operation

with the precautions laid down by this surgeon, and in every instance hitherto with the most favourable results, and I fully coincide in opinion with him, that there is no reason to apprehend a relapse, if the operation has been efficiently performed; and further, that I have not met with any example where this fungoid ulcer engaged the inner angle of the nail, and that it is altogether distinct in its site and nature from onychia maligna.

The treatment of the second form of the disease engaging the great toe-nail (namely, where the anterior and inner angle rests on a bed of white horny cuticle), is simple enough, and consists in scraping away, or picking out, with a suitable instrument, the laminated cuticle, and cutting away the bulbous angle of the nail. Great care must be taken from time to time to prevent any unhealthy growth of the cuticle or nail. This affection, apparently trifling, often causes great pain and lameness in walking, aggravated by the pressure from the shoe. Mr. Colles has known this affection mistaken for gout, particularly by persons where an attack is expected or even desired. The treatment of the third form of disease, onychia maligna, was conducted by Mr. Colles in the following manner:—He insists on confinement to bed during the entire treatment as essential. He poultices the toe for two or three days, then cleanses the ulcer thoroughly by means of a syringe and a stream of tepid water; he now cuts away as much of the loose nail as he can without irritating the surrounding sensitive surface. He next fumigates the parts by means of the mercurial candle, containing 3j. of the hydrarg. sulphuretum rubrum (olim cinnabar) to two ounces of wax. This fumigation is employed by means of a funnel, night and morning. After each fumigation the toe is enveloped in a piece of lint spread with spermaceti oil.

In four or five days the whole part will be much improved, and the discharge from the ulcer healthy and purulent. The fumigation is still persevered in, and all projecting portions of nail closely cut; this latter is essential. In proportion as the ulcer improves, so does the condition of the growing nail. For some time after the general surface of the ulcer is healed, there may remain small spots of ulceration, generally at the angles, around some white germs of new nail. The full power of the mercurial vapour should be directed against these points, by adding a small conical ivory tube to the funnel. The author states, that this plan of treatment never failed to cure during his employment of it for some years.

I must now, in candour, state, that the mercurial fumigation has not been so uniformly successful in the hands of other surgeons as Mr. Colles's experience would lead us to expect. I am aware that in a few instances it has failed; indeed, the same may be said of every mode of treatment, local or constitutional. In some cases of onychia maligna, especially if of long standing, I believe there is no hospital surgeon of experience who has not met with occasional examples of this disease which have baffled all his attempts to cure, especially among children of the poorest class; the constitution being often in such a cachectic state, the soft parts so extensively disorganized by long-continued unhealthy inflammation, ulceration, and sloughing, accompanied with caries of the subjacent bone, that amputation of the toe is our only resource. I admit that such cases are exceptions, and that in an overwhelming majority of instances, the disease is amenable to judicious surgery.—*Med. Times and Gazette, Sept.* 4, 1852, *p.* 243.

[The following successful plan of treating inverted toe-nail is mentioned by an anonymous writer in a letter to the editor of the 'Medical Times and Gazette.']

This painful state of things owes its origin to one of two causes, as a general rule; occasionally to both, as well as to others. These are, pressure from tight shoes, and an erroneous plan of cutting the nail. The first can be avoided, the second corrected. The toe-nail should be cut straight across, and not dug out at the sides in the way the finger-nails are usually cut; it should be sufficiently long to support the soft parts at the extremity of the toe; the angles will then overlap the skin on either side. So much for preventive measures.

Now for treatment—the object being to get the nail into the state above described. When the nail has been constantly cut at the side, small sharp-pointed pieces will sometimes be found imbedded in the thickened cuticle or inflamed cutis. These must be extracted with forceps; and where the ulceration is extensive, there will be much difficulty in managing the case without removing part of the nail. In ordinary cases this may be dispensed with. All that is

gained by removing part of the nail is, the removal of the cause which opposes the healing of the sores. The new nail must afterwards be trained, or the evil will be renewed with its growth.

My plan of proceeding is, to scrape the nail as thin as I can on the side affected. I then divide it with a knife from root to extremity, which, with patience and care, is a painless proceeding; thus partially separating about one-third of the nail, which, being rendered pliable by the previous scraping, I gently but perseveringly elevate at its extremity, and where inverted, daily, or instruct the patient so to do; at the same time keeping that part of the nail well scraped close to the root as it continues to grow. By these means, the nail is gradually brought to overlap the soft parts, and thus the evil is remedied. Where avulsion of the nail has been practised, the new nail should be treated as above, viz., scraped and its edge elevated; a little cotton may be inserted beneath the edge if necessary. Ointments and poultices I have found unsuitable appliances; they render the parts tender and irritable. Spirit and astringent lotions sometimes appear to expedite the healing of the ulcers. Caustics are occasionally requisite, where the granulations are exuberant or flabby; but the removal of the source of irritation usually renders special treatment of the ulcer needless.—*Med. Times and Gazette, Aug.* 21, 1852, *p.* 198.

[A correspondent of the 'Med. Times and Gazette' mentions the following plan of treating this condition which has usually been successful in three or four weeks.]

The patient is requested to foment the toe well with hot water, twice daily, for two or three days; I then apply the argent. nit. not only over the ulcerated surface, but also underneath, and over the nail: the advantage of applying it over the nail is, the horny texture of the nail becomes so softened that it can be cut if necessary, as easily as brown paper. Should the disease be extensive, the nitrate is rubbed over the whole of the nail, and the surrounding healthy skin, as I have observed that, by procuring a coating of the nitrate over the skin surrounding a diseased surface, much benefit results,—the absorbents being apparently excited, and thereby materially assisting the peccant part. The nitrate should not be rubbed over too long so as to produce excoriation,—the primary object being to obtain, if possible, a dry coating; and, with that view, after each application of the nitrate, the toe should be left exposed for half an hour. I never use any other dressing than a piece of soft lint, wrapped loosely round the toe. The pain from the free application of the nitrate is very severe for some hours; no inflammatory action, however, arises, and the patient who has been a cripple for weeks, is frequently so much relieved as to be able to walk in a day or two without inconvenience. The lint is to remain undisturbed for two days, when the toe is to be well fomented again, and on the third or fourth day the nitrate is reapplied, unless there should be a good dry coating; it then will be unnecessary. If the surface should be dry, and there is discharge underneath, the nitrate is applied under the excrescence. When a dry coating is procured, I allow it to remain until it comes off with fomentation. After each application of the nitrate, the fomentation is to be omitted for two days.

One of your correspondents, Mr. Lacy, will see that the real principle of the treatment coincides with his, excepting the pressure by the piece of cork, the hyd. nit. oxid., &c. I believe Mr. Lacy will find if he gives a fair trial to the above simple means, the excrescence will diminish and be removed much more rapidly than by applying pieces of cork or any other substance,—the dry coating of the nitrate forming a much more effectual pressure, besides getting rid of an infinite amount of trouble.

I had almost forgotten what has been supposed to be the chief cause of mischief—the nail. This is left to right itself, and is not to be touched; for, in my opinion, the great error in treating and permanently relieving these affections has been in considering this to be the principal obstacle.

[Dr. Kirk, of Glasgow, mentions briefly what happened to himself. He says:]

Several years ago, when a district surgeon, I was much tormented by the nail of the great toe of the right foot growing in, and one night, after a hard day's work, during which it had felt unusually painful, I found a large blister had formed at the root of the nail. The consequence of this was, that the nail exfo-

liated in a few days, and its successor did not annoy me for a long time afterwards. I intend, if ever it should annoy me as much again, to apply a blister immediately to the root and sides of the nail, and thus get rid, for a time at least, of this very painful and troublesome complaint.

I have often wondered that this plan of removing the nail, by means of a blister, has not been frequently resorted to in such cases, seeing that it ought to be well known to English surgeons, having been mentioned by Sir Astley Cooper in his 'Lectures on Surgery,' under the article 'Warts;' and that it was out of all comparison preferable to the barbarous operation recommended both by Sir Astley and Dupuytren for the cure of this affection.—*Med. Times and Gazette, Aug.* 28, 1852, *p.* 224.

[Mr. Lacy, regarding the mode of tearing away the entire or a portion of the toe-nail as a barbarous operation and not always a successful one, suggests the following plan. He says:]

My opinion is, that the parts ulcerated require the natural pressure that the onychia, or the cutting away of the nail, has removed; and with that view, I treat the parts with accurately and well-adjusted pressure and escharotics. I therefore apply freely the nitrate of silver to the fungus, on which I then put a coating of the nitric oxide of mercury; then, having cut a piece of cork of the shape and size of the nail, so that its concavity shall adapt itself accurately to the convexity of the nail, and taking care that it shall press towards its margin, or root, as the ulceration may require, I bind it firmly on with adhesive plaster. Some cases require lateral pressure only, when I cut the cork shaped like a comma. The first dressing will give pain for a short time, the amount depending on the intensity of inflammation present, and the nicety of the cork's adjustment. The pain, however, soon vanishes, and as the dressing does not require to be repeated but at intervals of two, three, four, or more days, as appearances indicate, the amount of suffering is but trivial.

It is rare that the arg. nitr. has to be applied more than thrice, though it is requisite to well coat the part with the red oxide till it be healed, which, the cork being re-adapted at each dressing, soon happens.

Case 1. 1845.—Miss H. had thickening of the great toe-nail, and its edges "grew in." She cut these as much as she could, "down to the quick." Had temporary relief; but the flesh grew more and more over the edge of the nail, and became "raw" (so she expressed it), and very painful. Could not wear a shoe. Consulted a surgeon, who tore away the nail,—"a most painful operation." For a short time she was easier, the nail being "a very long time growing." When it was wholly grown, she found it no better; suffered again the same pain, had the same ulceration, with the nail more uneven and thick than before. Again cut the edge, &c.; when, after being lame two years, she sought my advice.

Appearance.—The nail is unduly thick and uneven, and more convex than if normal. Its outward edge is imbedded in a foul, spongy ulceration, which rises far above the adjoining surface. She represents it as exquisitely painful.

Treatment.—Applied the arg. nitr. freely to the ulcered elevation, and coated it with the precipitate. Adapted a piece of cork, about one-tenth of an inch thick, so as to press upon the elevation, and push it away from the nail; well secured it with emp. adhæs. and a bandage. Complained of pain for half an hour.

Second Dressing, 3rd Day.—The sore very offensive and glairy, but covered with the oxide; it is somewhat reduced in height. Repeat the dressing.

Third Dressing, 7th Day.—The elevation nearly gone; discharge offensive; re-applied the oxide, and re-adapted the cork, so as to press aside the margin of flesh all round the nail. Complained of but little pain, the parts not being half so tender. She was duly dressed three more times, at longer intervals, and was quite well in less than three weeks. Could then wear a shoe, and walk without pain. Has continued well, and is now, seven years afterwards, well.

Case 2. 1845.—A labourer, from onychia, lost part of the nail. An offensive, exuding, elevated, and extremely painful sore followed. Was unable to work. Was under treatment by the Union surgeon some weeks, who proposed extracting the nail, as the means of saving his finger.

Treatment.—Dressed, as in the former case, every fourth day. The pressure

destroyed the elevation, and healed the sore. The flesh was kept from growing over the nail, as it formed, and a cure very speedily effected.

Case 3. 1849.—Mr. P., a pupil to a chemist at Brighton, states: "A shutter fell on my great toe, and crushed the nail at the root; lost the nail, then a new one came, which grew one-sided and into my toes, which produced proud flesh. I attribute the wrong growing of the new nail to my want of rest, and wearing boots, which prevented my medical adviser doing much for me; he, therefore, ordered me home."

Present Appearance.—The entire toe is red, inflamed, and tumid. A fungus, about the size of a pea, highly painful, projects over the edge of the nail; it is coated with a thin, glairy, offensive secretion. The nail is thin, and has been cut away where the excrescence is.

Treatment.—Applied the nitrate of silver, and then covered it with the precipitate. Adapted a slightly concave, thin piece of cork, so as to press on the crown of the nail, and all round the margin, as well as on the sore. The application gave pain which lasted an hour or more. On the following day, the patient could walk better. Dressed every other day. The inflammation and swelling very much reduced at the fourth dressing. The bandage is quite slack by the reduction of size. The fungus is not more than half its former size. Fourteenth day, continued the dressing, omitting the arg. nitr., as he now only requires the pressure and the oxide. The former can now be borne without pain. The toe is reduced to its original size. The cork is now comma-shaped, pressing only on the excrescence. Re-dressed from time to time with increased pressure of bandage, the cork being always re-cut. Returned to Brighton after four weeks, before he was quite well, but "soon recovered."

Case 4. 1849.—G. H., destruction of root of nail by a crush, now nine weeks ago. Nail came away seven weeks ago. Has been under treatment since then.

Present State.—The middle right finger greatly swollen, the inflammation extending to the metacarpal bone. The new nail is imbedded in the flesh, which is ulcerated, on both sides very much elevated, and discharging an acrid offensive matter. He looks anxious; he has lost flesh, appetite, and rest, and has irritative fever. He is constantly in pain and low spirits, as amputation has been proposed; and lotions, unguents, poultices, have been used in vain. The bone is supposed to be involved.

Treatment.—Coated the ulcerated surface with red oxide; so cut the cork, as to press only on the spongy elevations sideways, thus uncovering the nail. Applied gentle pressure, with bandage only, having merely fixed the cork with plaster. Persisted in this plan till the sixth day, then applied the argent. nitr. and increased the pressure so as to keep up lateral bearing, as well as pressure over the surface of the nail.

Seventh Dressing, 18*th Day.*—The finger is much reduced in size; it is not enlarged above the second joint, the elevations are reduced, and healing; and the dressing does not give a fourth the pain, though there is more pressure. The nitrate can be omitted, but the oxide must be still used freely. It forms a drying sort of coat, which, as well as by its stimulation, assists the healing process.

Ninth Dressing, 21*st Day.*—Improving in every respect; nothing but well arranged pressure required. The nail is wholly uncovered; the flesh healed; pain absent. Discharged cured within the month.

Case 5. 1852.—M. P., when at school, was troubled with ingrowing toe nails—supposed to arise from tight boots. Soaking, scraping, and cutting away the nail adopted for relief. Cannot now wear a boot, the toe is so swollen and inflamed, and there is such a "sore rising." The slightest touch gives pain. "The sore is by the side of the nail, growing over it where it is cut away, and it matters." Inspection verifies this.

Treatment as above with caustic and pressure. As the nail is thin, I have cut the cork, so as to press slightly on the crown of the nail, as well as on the flesh. Cured.

I could multiply cases. These examples will, I trust, be sufficient, the more so, as the treatment varies but little. My plan is simply the reverse of that usually practised. Instead of removing the nail out of the way of the flesh, I remove the

flesh out of the way of the nail. It matters, perhaps, not how. I have found the elastic cork, the adhesive plaster, the combination of the arg. nit., and red oxide most effectual. If the margin around the nail be ulcered, these latter are necessary. If it be not, but only tumefied and tender, I simply apply the nitrate, as I would over any slightly inflamed part, and the cork.

If the nail has been scraped, or is naturally thin, I try to render it less convex at the time I press aside the imbedding flesh. If it be thick, I do not attempt this. I believe the scraping the centre of a thick nail increases its convexity. A thin one is seldom very convex. If pus forms underneath the nail, I make an exit for it, and I prevent the parts underneath sprouting up by using pressure. I never remove a nail torn up by violence (as by machinery) if I can avoid it. If I can so adjust it (*in situ*) as not to become an irritant, I insure, by its uniform pressure on its coming successor, a better formed one.—*Med. Times and Gazette, July* 31, 1852, *p.* 119.

[Mr. Lacy thus records his deductions on this subject after twenty-five years' experience.]

1. If the nail, or any portion of it, be separated from its secreting surface, or cells, the natural defence to the latter is gone, and a sprouting ulcer (pterygium) is produced, which is not readily curable by any plan hitherto recommended for that evil.

2. That when this fungus is produced, it impinges on the adjacent edge of the nail, and being highly sensitive, causes intense pain, inflammation, &c.

3. If on the toe, the weight of the body, when in an erect posture, pressing the flesh upwards, increases the impingement, so does the lateral pressure of a boot or shoe.

4. That the filing away the edge of the nail, the scraping it, the lifting it up with stuffing, the mere application of escharotics, and the use of the scalpel (without it is meant to remove the secreting cells as well as the nail) is bad, and no improvement on the practice adopted by Aëtius, Celsus, Haly, Abbas, &c. See the Sydenham Society's edition of 'Paulus Ægineta.'

5. That the tearing away the nail, either wholly or in part, but rarely cures; it affords present relief, but if the after-treatment be not such as to keep the pterygium and entire fleshy margin (nail band, as it is called) from encroaching on the surface secreting the new nail, the case of the new nail is often worse than that of the old one. Such cases are types of No. 4, given in your last journal, where the nail was removed by violence,—"torn away," in fact,—and hence my having had several such cases to cure. That the mode of operating was not defective, may be implied from the fact, that in one case (that of a banker at Manchester) the late Mr. Liston was the operator.

6. That poultices, water dressing, and unguents, encourage the growth of these excrescences.

7. That no convex, or thickened nail, should be cut at its lateral edges to prevent its "growing into the flesh," without it is (as some are) detached; when the secreting surface being already so far perished, no injury follows cutting the nail.

8. That the least painful, the readiest, and the surest way to cure, is the reverse of that hitherto adopted; and the natural defence and pressure of the nail should be imitated, not further removed; and that the flesh around the nail should be kept from trespassing on its edges, whilst pressure on the fungus reduces it to a proper level, and restores its healthy functions. It is the practice, in fact, necessary to adopt after the operation of removal, if that operation is to be successful.

9. That the arg. nitr. allays the inflammation; that the hydr. nitr. ox. rubr., not only acts as an escharotic and stimulant, but forms, after two or three applications, a coating which acts as a defence, and, with the pressure, assists the reduction of the ulcerated excrescence, as well as the healing process.

10. That it is bad practice to remove this coating, however dirty it may look (from the lead to the empt. adhes.), though the surrounding parts should be wiped clean at each dressing.

11. That cork being flexible, and easily reduced to any required shape, is the cheapest and best substance with which to make gentle and uniform pressure.

12. That, if the "union of the papillary layer of the dermis, with the lamel-

lated structure of the nail;" or, if the nail band be ruptured by an abscess, the nail being intact, an excrescence will frequently follow, but that such is curable by pressure alone.—*Med. Times and Gazette, Aug.* 14, 1852, *p.* 172.

148.—THE COBRA DE CAPELLO POISON.

[Mr. Edward Hickman, formerly of the divisional medical staff, Barrackpore, Calcutta, in a letter to the editor of the 'Lancet,' sends the particulars of the following interesting case of which Dr. Mac Rae himself was the subject. The statement is Dr. Mac Rae's own.]

Cure of a Bite of a Cobra de Capello, as tried by Dr. Mac Rae on himself, on the night of the 12th May, 1809, *at Chittagong.*—I directed a teaspoonful to be given me of the spiritus ammoniæ compositus in a Madeira glass of water. Finding the first dose agreed with me, in five minutes or less I took a second, and so on, a third, fourth, fifth, and sixth, when the medicine began to have a favourable effect. The first benefit I was sensible of deriving from it was a relief from the sickness at the stomach; my breathing next became easier, my skin to recover its natural warmth, and the perspiration, with which I had been in a manner drenched, dried up by degrees. I still went on with the medicine, but at longer intervals, for every now and then I had a slight return of the oppression in breathing, which was immediately relieved on taking the alkali. I had thus gone on until I had taken thirteen spoonfuls, or a wine-glassful, of the medicine, before I considered myself as out of danger; and in proportion as I recovered, I became more and more sensible of the nauseous taste of the alkali, which latterly seemed to burn my throat as I swallowed it, though I could scarcely perceive the taste of the first dose I took, so totally or nearly gone was the nervous sensibility of my palate. In the course of three hours from my receiving the bite I was out of danger."

I can parallel the above with the case of a Sipahee of my own Battalion (1st Battalion, 23d Regiment), while stationed at Kissengunge, Bahar, many years afterwards. *Ex uno disce omnes.*

So well aware are the native medical staff, and all intelligent natives, of the efficacy of ammonia in these bites, that they commence with it *on the instant*, not waiting for superior advice. They frequently administer the Eau de Luce.

Dr. Mac Rae was a most intelligent physician of the Honourable East India Company's Service, of large experience and esteem. He proved his case, his servant having struck and killed the cobra.

The truth of the above practice can be testified to by hundreds of gentlemen now in this country.—*Lancet, Oct.* 30, 1852, *p.* 411.

[In a letter to the editor of the 'Lancet,' Dr. J. J. Cole, H. E. I. C. S., of Exmouth, says:]

I add my willing testimony to that of Mr. Hickman, in regard to the efficacy of ammonia in all cases of poisoned wounds, from that of the cobra itself down to the smallest venomous insect. I would almost say that ammonia is an antidote to the venom of the most deadly serpent, provided always time be given for its due administration. The liquor ammoniæ fortior (P. L.), in doses of ten to twenty drops, appears to be the better form. It is not, however, my purpose at present to give the result of practice in poisoned wounds; but I wish to observe that I am by no means certain that to suck a wound inflicted by a cobra would not be dangerous to the sucker. I question whether the gastric juice would neutralize "the deleterious principle of the poison." Mr. Wakley's assurance that he would not hesitate to apply his lips to such a wound points to danger in the act. It also points to his readiness (like many others of our profession) to risk something of his own to save another's life.

It is pretty clear that if the mucous membrane of the sucker's lips and mouth be sound, and he be very careful to spit out the matter drawn, mischief could scarcely accrue. But I apprehend (from what we learn in India) that when the poison reaches the stomach there is the utmost danger to life. Whilst I write, my native servant tells me that persons die who inadvertently swallow the venom of the cobra, and that this happens from eating food or drinking milk of which

a cobra had previously partaken. He declares most positively that milk drunk of by the cobra is rendered poisonous to other animals, and relates a curious story (which he witnessed with a medical officer and some gentlemen of the civil service at Calcutta), of two dogs being killed by drinking milk of which a cobra had before taken a part. The milk was given to the second dog, and he died in the course of an hour, presenting (according to my man's description) very characteristic symptoms of death by the admixture of venom with the blood.

It is not allowed that poison is *ejected* by the serpent whilst feeding; there appears, however, reason to believe that a little at least *exudes*. We know it is so in the case of the scorpion, mosquito, and other little animals of the tropics. The serpent bites in anger and self-defence; the mosquito in order to get at its food; and *both* inflict a poisoned wound, similar, I believe, in character, immeasurably dissimilar in degree. Of the great efficacy of suction to a wound, the mosquito himself teaches us something; for if he be allowed to take his fill, he counteracts by suction the effects of his own poison, and the bite is followed by very trifling *irritation*. If, on the contrary, the little fly be driven off the instant its sting is felt, considerable *inflammation* assuredly follows. This, I take it, accounts for the fact—that persons just arriving in India suffer infinitely more from mosquito-bites than old residents, and not that the blood becomes accustomed to the poison, or that the mosquito prefers a white, fresh skin to a dried-up yellow one.

The "griffin" (a person just arrived in India) is so impatient of mosquito stings, that one within his curtains will keep him employed half the night, and bite him too, to his cost, in a dozen places. The veteran allows him to gorge himself with blood, and scarcely notices in the morning whence he took it; at the same time he finds his bloated friend quietly perched upon the curtain, and wholly at his mercy. These things serve to show that an animal inflicts a poisoned wound whilst seeking its natural food, and that suction immediately applied is the best preventive of mischief. It remains to be proved whether the cobra poisons his food, and whether his venom is noxious to the life of man when taken into the stomach.—*Lancet, Nov.* 18, 1852, *p.* 445.

[Dr. Robert Barnes, in a letter to the editor of the 'Lancet,' confirms the value of *Eau-de-Luce* as an antidote for the serpent-bite. Dr. B. says:]

The late distinguished Lisfranc informed me that his father, who practised in the south of France, witnessed cases of bites from the adder every harvest time, and that his treatment consisted in applying ammonia to the seat of the bite, as well as freely administering it internally. M. Lisfranc spoke in the most unqualified manner of the success of this plan.

It may be said that the poison of the adder is a very different thing from the poison of the cobra de capello; but it would be wrong to assert that the bite of an adder is not a serious and sometimes even a fatal accident; and it is almost certain that if there be a difference in the degree of virulence of the two poisons, there is a close analogy in kind. In the treatment of cases of poisoning, where an animal poison is introduced into the system through a wound, I think it important not to neglect the local application of the remedy. Although the rapidity of the process of absorption soon infects the blood, and thus renders constitutional treatment essential, this circumstance does not supersede the utility of local treatment. Without going into a lengthened discussion, I will suggest that some portion of the poison may remain for a time in the wound, and be taken up into the system by degrees, thus adding to, and keeping up, the aliment of disorder. This portion may be neutralized or destroyed by the application of ammonia. Again, it is highly probable that some of the ammonia thus applied to the wound may be absorbed too, and may thus chase the poison into the circulation.

When the time for suction—the first remedy—has gone by, the application of ammonia should on no account be omitted.—*Lancet, Nov.* 6, 1852, *p.* 431.

[A correspondent in a letter to the editor of the 'Lancet,' remarks:]

In reference to the unfortunate occurrence that has lately happened at the Zoological Gardens, I may mention the following circumstance that passed under my own personal knowledge, and which, I think, when known, may be of benefit

to others, particularly to young men going out to India in the medical line or otherwise. I had seen in a Madras paper a letter from a Bengal surgeon, in which he mentioned that the Ganges, on whose banks his regiment was stationed, had, in consequence of heavy rains, risen and deluged the adjoining land. The snakes had in consequence forsaken their hiding places, and found their way into the Sepoys' huts. About twenty men were bitten, and brought into hospital, with all the symptoms of suffering from a cobra's bite, apparently beyond hope. The surgeon gave to each hot brandy-and-water, with peppermint and laudanum; and he did not lose a man. At the time I speak of, I was stationed at Bellary, and I was in the habit of keeping greyhounds, one of whom, about nine o'clock at night, was bitten by a snake. The dog gave a cry of terror, and ran off. The night being dark, he was not to be found for some time—a quarter of an hour; he was cold, the limbs quite stiff, the eyes fixed and glassy, and not a pulsation could be found. As the animal was a valuable one, I was anxious to save his life, and had him brought into the house; and remembering the surgeon's success, I lost no time in mixing a comfortable tumbler of brandy-and-water (not to be sneezed at), with the laudanum; the dog's mouth was forced open by straps, and a tablespoonful of the mixture given every ten minutes. For a very long time no change in the animal was perceived, but at length I thought a slight pulsation might be felt, which gave some hope of ultimate success; in short, at about three o'clock in the morning, the dog was able to stagger and be removed. As well as I remember, he must have taken two large tumblers of the mixture.—*Lancet, Nov.* 6, 1852, *p.* 431.

149.—*New Method of Performing Tracheotomy.* By Dr. C. Gerson.—For the performance of tracheotomy, Dr. Gerson has contrived an instrument consisting of three moveable branches, which join at the end, so as to form a sharp point, and can be separated by means of a vice at the other extremity of the cone. By turning the vice from left to right, the branches diverge and form a cone, of which the base is turned towards the wound, and which thus resists the tendency of the cartilages to expel it from the aperture.

In operating, an incision of two or three *centimètres* (four-fifths of an inch to one and one-fifth) is made through the skin, the veins are put aside, and the incision, gradually diminishing in length, is continued until the space between two of the cartilaginous rings can be distinctly felt with the nail of the fore-finger. The trachea is then fixed; and the instrument is glided along the nail of the fore-finger, and is made to penetrate into the space between the rings for about three or four *millimètres* (about one-seventh or one-ninth of an inch). An expansion about a quarter of an inch from the point, prevents the instrument from penetrating too deeply. The instrument being held steadily, the handle of the vice is now turned, and the branches of the instrument caused to diverge. When the opening is sufficiently wide to allow the canula to pass between the branches of the instrument, it is introduced into the trachea. The loss of blood is inconsiderable; and the air escapes with so much force, that it would expel every drop which might be inclined to enter the bronchi.—*London Journal of Medicine, October*, 1852, *p.* 932.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE PRECEDING PAGES; SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

AGUE.—Apply a liniment along the spine, composed of 3 j. of chloroform to ℥iijss. of essential oil of turpentine. (M. Aran, p. 26.)

COLLAPSE.—In a case of collapse coming on in a boy three and a half years old, during an attack of measles, forty minims of turpentine, combined with two drachms of ipecacuanha wine, proved a most valuable diffusible stimulant. (Mr. C. W. Whitby, p. 325.)

FEVER, *Intermittent.*—Several cases of convalescents being attacked with intermittent fever, having occurred in the practice (hospital and private) of Dr. Dundas while in Bahia, the conviction on his mind became irresistible that they did not arise from a marsh poison, but sprung directly from imprudent or too early exposure to a strong current of cool sea air, loaded with moisture, while the system was under the debilitating influence of previous exhaustion or disease. (Dr. Dundas, *Edin. Med. and Surg. Journal, Oct.* 1852, p. 319.)

HYDROPHOBIA.—In a case of this terrible affection, chloroform was administered with great relief to the restlessness, vomiting, and violence of the convulsions, though it had no effect in preventing the fatality of the case. (Dr. J. A. Lawrie, p. 29.)

INFLAMMATION, *Farcinomatous.*—In a case of this kind, attacking the left foot, attended by great constitutional prostration and sloughing of the part, five-grain doses of the sesquicarbonate of ammonia, administered every two hours, were followed by the most decided benefit. (Dr. Mackenzie, *Med. Times and Gazette, July* 3, 1852, *p.* 7.)

SCARLATINA.—Dr. Andrew Wood, physician to Heriot's Hospital, Edinburgh, recommends the production of diaphoresis. This is to be produced in the following manner, as ordinary diaphoretics fail:—Several common beer bottles, containing very hot water, are placed in long worsted stockings, or long narrow flannel bags, wrung out of hot water. These are to be laid alongside the body, but not in actual contact with the skin; one on each side, and one between the legs, will be generally found sufficient. Carbonate of ammonia seems to act most beneficially by supporting the powers of life, by assisting the development of the eruption, and by acting on the skin and kidneys. When carbonate of ammonia cannot be borne, brandy may be given. No depleting measures must be adopted, even purgatives must not be given during the first ten days, as tending to interfere with the development of the eruption. (Prof. Bennett, p. 21.)

SMALL-POX.—In a case of small-pox, attended by great swelling of the throat and painful and difficult deglutition, great relief followed the application to the throat of jeweller's cotton, well sprinkled with powdered camphor. (Mr. H. George, p. 290.)

In two cases of small-pox, the application of a saturated solution of gutta percha in chloroform, applied over the pustules, prevented the disfigurement arising from pitting. It is of great importance to observe that the solution should not be applied until the pustules are fully maturated, or even begin to exhibit the first appearance of collapse. (Dr. Stokes, p. 288.)

VARIOLA.—In a case of confluent small-pox, the face was covered with mercurial ointment stiffened with starch. The face was free from any marks of the disease afterwards, presenting a marked difference to the other portions of the skin. (Prof. Bennett, p. 22.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—The indications in this disease are to improve the state of the blood, amend general nutrition, calm the nervous system, and infuse tone into the muscular. If any irritation exists it must be removed. The most frequent source perhaps is from ascarides in the rectum, and these may be removed by an injection of a strong solution of salt in water, or an infusion of quassia into the rectum. The disease very frequently yields to attention to diet, and the cold affusion employed two or three times a day. Of the tonics, those of the metallic kind are the best, especially iron and zinc, or quinine may be employed, or some form of bark. Sometimes the muscles become slightly paralysed; the best remedy for this, is the careful employment of galvanism; a gentle and slowly interrupted current may be transmitted through the paralysed part from a quarter of an hour to twenty minutes at a time. Friction with a rough towel or a flesh brush may be also employed. (Dr. R. B. Todd, p. 35.)

Dr. Merei regards the ammonio-sulphate of copper as a sovereign remedy in chorea. Out of 177 cases treated at Pesth, 170 had been restored by this drug to perfect health in an average time of 22 days. The prescription he employs is the following:—Aq. menth. pip., ℥iv.; ammonio-sulph. cupri, gr. viii.; tinct. opii, gtt. viii.—xii.; syr. simplicis, ℥ss. A teaspoonful may be commenced with, four or six times a day, gradually increasing the dose. A child from nine to fourteen years old might take a tablespoonful four or five times a day. If sickness is produced, cease for a day, then recommence in smaller doses. If chlorosis or anæmia is conjoined with the disease, then add some preparation of iron. (Dr. Merei, p. 38.)

The inhalation of chloroform in the ordinary manner on a pocket handkerchief in a case of chorea, under Sir Henry Marsh, was followed by the most marked relief in the symptoms. (Dr. Banks, p. 34.)

Epilepsy.—Dr. E. Watson having studied Dr. Marshall Hall's theory of the relation of laryngismus to epileptic convulsions, adopted the following treatment. The patient was a young lady, who for several years had been afflicted with epilepsy. Dr. Watson applied a solution of nitrate of silver (℈j to the ℥j) to the glottis, daily, for a fortnight, and afterwards for some weeks with longer intervals between the applications. There can be no doubt but that the treatment gave marked relief, both in the frequency and intensity of the paroxysms. (Dr. E. Watson, p. 42.)

Headache.—Give doses of half a grain to one grain, three times a day, of the sulphate of nickel. This remedy seems to have been a very valuable one in the hands of Dr. Simpson, of Edinburgh. It seems to be of use in those cases in which iron has been employed, especially in chlorosis and amenorrhœa. (*Monthly Journal of Med. Science, Aug.* 1852, p. 135.)

Neuralgia, *Facial.*—Apply the following pomade over the affected nerve, renewing the application according to circumstances:—Pure chloroform 4 drachms; cyanide of potassium 3½ drachms; axunge 8 ounces; wax sufficient to give consistence. If the neuralgia is in the scalp, a piece of the ointment the size of a pigeon's egg is to be rubbed over the part, and the head is then to be covered with an oil-skin cap. (M. Cazenave, p. 43.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Epistaxis.—The following plans may be tried:—1. Apply alcohol on dossils of charpie. 2. Blow into the nares equal parts of powdered gum and alum, or dossils rolled in this mixture may be applied, taking care to moisten them with warm water, before removing them. 3. Perhaps the best plan is previously to dry the nostrils and then pass into them dossils of pure clean cotton wool, until they are filled, not pressing it in too tightly, or allowing it to be too loose. (M. Reveille-Parise, p. 169.)

Erectile Tumour.—In a case of a large erectile tumour in the neck, the following treatment was followed with complete success. The tumour was

punctured at the centre, by means of Anel's syringe, and wine aromatized by aromatic herbs was injected. Considerable inflammation followed, but by cold applications and antiphlogistic treatment, it was subdued; and on the seventeenth day after the operation the tumour was no larger than a pea. (Prof. Riberi, p. 170.)

Hemorrhage *from Wounds of the Palmar Arch.*—When an artery is divided in the palm, apply pressure as follows:—Let each finger and the thumb be separately bandaged to the metacarpal bone, then, the finger of an assistant being still kept upon the divided vessel, apply compresses to the remaining space in the palm, reserving that over the bleeding vessel for special pressure. Press a small dossil of lint into the wound; over this a compress; over this another, and so on, until these are elevated over the surrounding integuments. Then let a roller be applied over the compresses, and carried as far as the elbow, placing a small compress over the radial and ulnar arteries to moderate, but not interrupt, the flow of blood. It is important that the palmar aponeurosis should be flexed so as to allow the pledget of lint to come in contact with the divided artery. The treatment by pressure to be successful should be applied early, and the bandaging be evenly employed over the entire limb, at the same time the arm must be kept constantly elevated. (Mr. R. G. H. Butcher, p. 167.)

AFFECTIONS OF THE RESPIRARORY ORGANS.

Air Passages, *Topical Medication of.*—Dr. Horace Green states, that not only does he constantly pass a sponge containing a solution of nitrate of silver into the glottis, but frequently, by means of a probang nearly straight, he has passed it down to the division of the trachea, and *by turning it aside, even into the right or left bronchus, with as much ease or safety as the catheter is introduced into the bladder.* (Dr. H. Green, p. 60.)

Instead of thrusting a piece of sponge into the larynx, in applying the solution of nitrate of silver, Dr. Cotton, by means of a pair of forceps made by Mr. Coxeter, squeezes the sponge saturated with the solution over the larynx, so that it passes into its interior. This plan is stated to be much less irritating than the one commonly employed. (Dr. Cotton, p. 70.)

Croup.—Place the child in a bed closed with a double curtain. Introduce into the bed a large earthenware pan nearly filled with all but boiling water. Into this occasionally submerge a heated brick, for the purpose of disengaging steam. By this means the atmosphere around the little patient will be kept at a temperature of from 75° to 80° Fahr. and surcharged with vapour. In addition to this part of the treatment, give an occasional emetic whenever the breathing seems impeded, not to produce the constitutional effect of the drug employed, but to facilitate mechanically the expulsion of the products of the inflammation. (Dr. W. Budd, p. 74)

In a case occurring in a child three years old, after leeches, calomel, salines, and ipecacuanha had been employed, chlorate of potass was administered apparently with the most marked benefit. (Mr. E. F. Sankey, p. 76.)

Glottis, *Œdematous.*—Apply a solution of nitrate of silver, where it arises from a sub-acutely inflamed mucous membrane. (Dr. E. Watson, p. 69.)

Hæmoptysis.—Dissolve a drachm of gallic acid in six ounces of hot water, and add rather more than a table-spoonful of brandy if the patient is faint. A dessert-spoonful of the mixture may be given every three minutes until the bleeding has abated, and afterwards at less intervals. (Dr. W. Bayes, p. 51.)

Hooping Cough.—Apply a solution of nitrate of silver, 20 grains to the ℥j. of water, to the larynx by means of a probang and sponge. Out of 125 cases of this disease so treated, 78 were speedily cured, 39 were greatly relieved and shortened, and 8 resisted the treatment altogether. (Dr. E. Watson, p. 67.)

Dr. V. Brewning employs the following: ℞ Tannini, gr. 1-6th; acid. benzoic, ext. belladon., utrq., gr. 1-12th; pulv. rhei, gr. iij.; p. gumm. acac., gr. xij. M. fiat pulv. The powder may be given three or four times a day. For a very young child half the dose twice daily will be sufficient. (p. 71.)

M. Joubert cauterizes the glottis in this disease. His experience is, that out of 68 cases 40 were rapidly cured, 21 markedly relieved, and in only 7 did the treatment fail. (p. 71.)

LARYNX, *Inflammation of.*—In the first stage of an inflammatory attack of the larynx or trachea, when the mucous membrane is dry, an emetic will restore the moisture. Cauterization should be used locally at the same time that the emetic treatment is adopted internally. In treating these inflammations by the application of the nitrate of silver, it is important to bear in mind that *the more intense the degree of inflammation of the lining of the larynx is, the weaker ought to be the solution of the nitrate applied to it.* The first effect of the application is to coagulate the albuminous film upon the surface of the membrane which had been stripped of its epithelium, and thus to cover and protect it. As the good effects of the application are worn off in a few hours, the touching of the larynx must be repeated frequently for some days, until all the symptoms of laryngitis have completely disappeared; as in most severe cases, especially in adults, a chronic thickening is liable to be left, it is a good precaution to give a little mercury towards the end of the acute attack. In true exudative croup, where the inflammation is of a much more intense and fibrinous character, and where it is almost of a purely local nature, seizing at once on the larynx or trachea, the treatment by the application of caustic is unsuitable, the symptoms being increased rather than diminished, by its use. (Dr. E. Watson, p. 63.)

PNEUMONIA.—Apply flannels soaked in warm spirits of turpentine over the regions of the dulness, and keep them on for half an hour. Let these be applied three times a day for three or four days. Give the liq. ammon. acetatis as a diaphoretic, in doses of six drachms every three or four hours. An occasional dose of a mild aperient may be given, and the patient allowed a pint of beef tea, with a little milk and bread, daily. (Dr. R. B. Todd, p. 52.)

TRACHEOTOMY.—Dr. Gerson, of Hamburg, has invented an instrument which is similar to a three branched speculum in principle, for the purpose of opening the trachea without risk of hemorrhage. This instrument and the manner of using it, are described at page 336.

AFFECTIONS OF THE DIGESTIVE ORGANS.

ASCARIDES, *Lumbricoides.*—Use the following powder:—Pulv. sem. santonici, pulv. sem. tanaceti, utrq., 3ss.; pulv. rhei, gr. xij.; pulv. jalapæ, gr. viij.; saccb. alb., ℈ iv. F. pulv. To be divided into six or twelve powders, according to the age of the child. Give two to three powders every day. If the effect of the medicine is wished to be increased after it has been taken two or three days, add two or three grains of calomel to each dose, for three or four times.

Vermicularis.—Use injections of an infusion of red onion, mixed with half a grain of aloes. (Dr. Merei, p. 90.)

DIARRHŒA.—Give matico in doses of from eighteen grains to ℥j. per diem. (M. Modonini, p. 87.)

DYSPEPSIA.—As much of the following compound, properly diluted, as will not affect the taste of the food disagreeably, may be taken along with each meal:—Solution of potash, chloride of sodium, of each one ounce; phosphate of soda, a drachm and a half; water, three ounces. (Mr. J. Spurgin, p. 81.)

FISTULA IN ANO.—Make a paste of chloride of zinc, with flour and water, and this being entangled in a grooved probe, pass it up to the opening in the rectum. The point of a second probe or instrument is then to be placed in the groove and passed just sufficiently high, that by being retained in that position while the armed probe is withdrawn, the groove may be cleansed of the paste. This may be repeated every second or third day. (Mr. E. Lacy, p. 194.)

HARE LIP.—In a complicated case of this kind, after the operation, Mr. Quain derived the most essential assistance from the supporting spring, which has lately come into use. This encircles the head from behind, and the two ends, furnished each with a pad, rest upon the cheeks, which are thereby supported in the position given them. All dragging or pressure upon the sutures is thus prevented. (Mr. R. Quain, p. 171.)

HERNIA.—M. Malgaigne having recently formed the idea of converting irreducible into reducible hernia, Mr. Cooper recites a case which occurred so far back

as 1837, to prove his having previously employed this plan. In that case, in a lad seventeen years old, Mr. Cooper kept the abdominal muscles constantly relaxed, and frequently applied ice to the tumour. He was also kept on low diet, and the bowels moderately opened. On the 19th day of this treatment, the hernia was easily reduced, and to his knowledge has never descended since. In another case, a patient was kept under this plan of treatment for fifteen days, with the like success. When it is supposed the hernial sac contains omentum, Mr. Cooper recommends small doses of blue pill and tartarized antimony in addition to the foregoing plan. (Mr. B. B. Cooper, p. 179.)

Strangulated.—In a case of strangulated femoral hernia in a female, Mr. Ferguson did not make the Y shaped incision as is usual over the tumour, but he made a straight cut, about one and a half inches long, over the inner side of the hernial tumour, almost directly over Gimbernat's ligament, which he wished to touch. He did not care whether he saw the sac or not, but sought for the ligament, and having divided it, with a little pressure the contents of the sac receded. For this simple plan, the profession is indebted to Mr. Gray, of the Royal Free Hospital. There is often more danger incurred by the taxis than by the operation, because we do not know what pressure the parts will bear without serious injury. Faith should not be put in opium; it is an excellent remedy in certain instances, but these are rare compared to those in which it can be of no essential service. (Prof. Fergusson, p. 176.)

Intestinal Obstructions.—In a case in which the ascending colon was opened, Mr. Hilton operated as follows:—He made a vertical incision two inches long in the outer edge of the quadratus lumborum muscle, between the last rib and the crest of the ilium, extending nearer to the ilium than the rib. The transversalis muscle was then divided vertically to the extent of two inches, parallel to the outer edge of the quadratus lumborum, and after a portion of fat had been removed and separated by means of a blunt director, and an artery had been tied, the intestine was clearly brought into view, of a greyish pink hue and somewhat bulging. By pressing upon the anterior wall of the abdomen the bulging of the intestine became more prominent A long curved needle armed with silk was now passed through the intestine and then through the integuments at the point nearest the anterior edge of the wound, so as to fix the intestine anteriorly, and in a similar manner the part nearest to the posterior edge was likewise fixed. A vertical incision was then made, about an inch in length, into the intestine between the transfixed points above alluded to. (Mr. J. Hilton, p. 185.)

Jaundice.—In jaundice from suppressed secretion of the liver, give from ℥ss. to ℥j. of sulphate of magnesia, with xv. grains of carb. of magnesia, and ℥ss. of aromatic spirit of ammonia, three times a day. (Dr. G. Budd, p. 95.)

Rectum, *Irritable.*—In a case of this disease attended with constipation, in which repeated glysters and large doses of castor oil had failed in giving any relief, perfect success followed the administration of five grains of pil. saponis c. opio, given three times a day; with ℥ij. of castor oil on alternate mornings. The opium did not in any way interfere with the powers of digestion. (Dr. G. H. Barlow, p. 196.)

Ulceration and Excoriation of.—Keep the bowels free by the management of diet after the confection of senna has been used. Touch the small surface of ulceration with the point of a piece of sulphate of copper morning and evening, and after the bowels have been opened apply hot water with a sponge for a few minutes, and then an ointment consisting of hyd. c. cretâ and ceratum cetacei ℥ss to ʒj. (p. 187.)

Place the forefinger of the left hand upon the sore, and with a probe-pointed bistoury fairly divide the ulcer longitudinally by passing through it into the subjacent tissue. If the ulcer is extensive, or complicated with other diseases, some addition is necessary to the treatment by simple incision according to the complication. Sir B. Brodie and Mr. Copeland agree in the above method of treatment. (Mr. R. Quain, p. 192.)

Sarcina Ventriculi.—In a case of this disease attended by frequent and most violent acid vomiting, after alkalies, hydrocyanic acid, creasote, nitrate of silver, and opium, had been tried, without permanent effect, ʒss. of the concentrated

essence of calumba, prepared by Messrs. Gale, Baker, and Co., to the ℥viij. of water, and given every two or three hours during the attack, gave the most decided relief. (Mr. T. E. Amyot, p. 87.)

Tongue, *Tumours of*.—For the removal of these tumours, the surgeon has choice of three methods. Amputation by the knife gets rid of the mass at once; strangulation by means of ligature prevents any loss of blood; and excision performed carefully by a wire heated by galvanism accomplishes both these objects at the same time. (Mr. Erichsen, *Med. Times and Gazette*, Oct. 16, 1852, p. 389.)

Throat, *Erysipelatous Affection of*.—Dr. Todd has related several cases of this affection, which is characterised on its first approach by symptoms somewhat resembling lockjaw; in one case the patient was not able to open his mouth by the most violent effort. Then follows great difficulty of swallowing any fluids, even a little water. The best treatment seems to be, the application of the solid nitrate of silver to the fauces, and enemata of strong beef tea, with ten grains of quinine in each, to be administered every four hours. (Dr. R. B. Todd, p. 77.)

AFFECTIONS OF THE URINARY ORGANS.

Bladder, *Paralysis of*.—Never evacuate the whole of the urine from an over-distended bladder at once. Patients sometimes die from severe depression owing to its sudden removal. Cathartics are valuable in this disease, especially turpentine and castor oil, along with calomel. Emetics must not be neglected. Of nervous remedies, strychnine, cantharides, and arnica, are the most important. They may be given in the following formula: Strychnine 1-16th of a grain, cantharides 1-8th of a grain, and arnica three to five grains, three times in the twenty four hours. Counter-irritation, such as a succession of blisters over the dorso-lumbar region, is useful in almost all but the inflammatory form of vesical paralysis. The actual cautery is also a proper remedy. (Prof. Gross, p. 110.)

In a case of this affection from over-distension, the patient, a female, was ordered to be electro-galvanised three times a week, and to take ten minims of the tincture of the sesquichloride of iron, three times a day in infusion of quassia. The catheter to be used twice a day. In a fortnight the patient was able to pass the urine voluntarily, and in a few days more was completely recovered. (Dr. Lever, *Guy's Hospital Reports*, Vol. VIII, p. 42.)

Puncture of, through the Rectum.—Pass the index-finger of the left hand into the rectum until the prostate gland is felt; the finger must be pushed, if possible, behind this part; seek now for fluctuation, which, however, is not always easy to find. The anterior part of the bladder having been pressed upon, and the posterior part of the prostate gland recognised, glide the instrument along the palmar surface of the left index-finger until it is in contact with the distended bladder resting upon the rectum—take out the director—introduce the trocar—and push it upwards and forwards one or two inches into the bladder. The greatest care should be taken that the prostate gland be not transfixed; it might be a fatal mistake. (Mr. J. Hilton, p. 216.)

After puncturing the bladder through the rectum, the patient should be kept in bed at least three weeks after the sinuses are securely cicatrised, as from its weak and feeble organization, the newly-formed cicatrix is liable to give way. (Mr. J. Hilton, *Lancet, Nov.* 13, 1852, *p.* 435.)

Puncture of, through the Symphysis Pubis.—Dr. Brander recommends puncturing the bladder through the symphysis pubis. He performed the operation first on the dead subject, and then carefully dissected the parts and found that in all respects it had been a successful one. The operation has now been performed several times with complete success. He employs a flattened trocar. (Mr. H. T. Chapman, p. 251.)

Neuralgia of.—To subdue the intensity of the disease employ a systematic course of purgation. This treatment is valuable also in neuralgic affections of other parts of the body, accompanied by inflammatory symptoms. Then carbonate of iron may be employed; but if arising from malarious influence, quinine and

arsenic are to be preferred; gr. iv. of quinine may be taken every three hours until 15 or 20 grains have been taken. To eradicate both vesical and other forms of neuralgia, employ the following:—Acid. arseniosi, gr. ij.; strychnine, gr. j.; ext. aconiti, gr. viij.; pulv. opii, gr. v. M. These ingredients are to be carefully incorporated and divided into 16 pills of equal size, of which one may be given every six hours, or four in the 24 hours. When nausea begins, the pills must be given less frequently, or ½ or ⅓ of a pill may be employed at a time. The exhibition of the pills also should not be continued longer than a week or ten days at a time, to allow the stomach a short recess, when they may be again resumed. (Professor Gross, p. 109.)

Corpus Spongiosum, *Inflammation of.*—The following symptoms were produced by the frequent passage of too large sounds along the urethra, in a case of calculus in the bladder; excessive hardness of the corpus spongiosum, tenderness on pressure, pretty constant discharge of mucus from the urethra, frequent desire to pass urine, great expulsatory efforts being required to ensure even its slowly draining from the penis, and apparently almost obliteration of the canal, notwithstanding the size of the instruments forced along its passage. Mercurial and iodine ointment were prescribed, to be rubbed along the perineum and whole course of the urethra, and the patient put under mercury constitutionally. The dilatation of the urethra was recommenced gradually, always keeping within No. 8. (Mr. J. Hilton, p. 211.)

Hydrocele.—Mr. B. B. Cooper does not agree in the opinion, that diffused and encysted hydrocele are the same disease, with the exception that in the latter the fluid is merely contained in an adventitious sac. He thinks diffused hydrocele to be merely an anasarcous collection of fluid, the same as other œdematous effusions; and encysted to be always more or less connected with the tubuli seminiferi of the testicle, or epididymis, or vas deferens of the chord He is led to this opinion from spermatozoa being always found in the fluid. (p. 262.)

Congenital.—The treatment, it is evident, in congenital is different to what it is in ordinary hydrocele. The best plan is to draw off the fluid and then to apply pressure upon the external abdominal ring, to cause adhesion between the walls of the canal through which the tunica vaginalis communicates with the abdomen. If this can be effected it is then resolved into common hydrocele, and treated by injection, but not until. The French surgeons perform the operation of injecting even in congenital hydrocele, with the precaution of pressing firmly upon the abdominal ring, to prevent the irritating fluid passing into the abdomen; but this must be a dangerous proceeding, as it is no preventive to the inflammation extending to the peritoneum lining the abdomen. In children, the treatment of congenital hydrocele is to press the fluid back into the abdomen, and then apply slight pressure upon the external abdominal ring; when the communication is cut off between the abdomen and the scrotum, the fluid in the latter will be readily absorbed; this plan is generally effectual up to puberty. (Mr. B. B. Cooper, p. 257.)

Lithotrity.—After the operation of lithotrity, it sometimes happens that a fragment of the stone becomes impacted in the membranous part of the urethra. To ascertain the nature and seat of the fragment pass a soft bougie down the urethra; the fragment seldom fails to leave a mark on the bougie, whereas a metal sound would pass over it and communicate no impression. Where impaction is to be apprehended, the patient should not be allowed to make water while on his knees, but must endeavour to do so while on his back. Immediately after the operation several injections of warm water should be thrown into the bladder by means of a large catheter, with large eyes, for the purpose of removing as much of the detritus as possible. If a fragment should be impacted, and if it should be near the neck of the bladder, it may be gently pushed back, but in all cases, if there is any resistance, injections of warm water should be used through the catheter. If it is impossible by these means to push back the fragment, there is only the choice between extraction and crushing, and whenever the former can be effected without much difficulty it is to be preferred. (Mr. W. Coulson, p. 230.)

Lithotomy and Lithotrity.—[The indications, comparative advantages, and relative applicability of lithotomy and lithotrity are considered at length by Mr. Coulson in article 98. See p. 222-246.]

Prostate, *Enlarged.*—M. Vanoye recommends the administration of sal am-

moniac in large doses, commencing with 15 grains every two hours; we may double or treble this quantity, so that ʒss. is taken per diem. Mucilaginous vehicles, bitter extracts or aromatics, and a good animal diet, should be employed at the same time. This plan should not be followed in hemorrhagic dispositions, or in affections due to poverty of the blood. (M. Vanoye, p. 111.)

Stricture of the Urethra.—Mr. Moore proposes to treat this condition by dilatation. He first passes down the urethra a thin expansible tube, and when this has passed through the stricture, he introduces a wire stilet, after this one larger and so on, until gradually perfect dilatation is effected. A command of the passage may be obtained by allowing the flexible tube to remain some time in the urethra, which may be done for days together, without any risk of suppuration or irritation taking place. (Mr. W. J. Moore, p. 212.)

[Professor Syme's remarks on this subject are given at p. 197.

For Mr. Coulson's views of Professor Syme's operation, see p. 199.]

Traumatic Stricture.—Mr. Coulson asks the question, where great damage has been done to the urethra from injury, whether it would not be better to contrive some artificial outlet for the renal secretion, than to make repeated attempts to rectify the state of the natural canal when they are not likely to be attended by success. He thinks rather than risk repeated attacks of retention, the best plan would be to make an opening into the bladder above the pubes, or through the rectum, and by allowing the urethra perfect rest for a few days, favour its return to a normal state, and then, if after several weeks' rest, the urethra is found so mutilated as not to be amenable to the treatment by dilatation, to make such temporary opening permanent. (Mr. W. Coulson, p. 213.)

Vesico-Vaginal Fistula.—[A long article on this subject by Dr. J. M. Sims, of Montgomery, Ala., U. S., detailing his peculiar method of operation, with engravings of the mechanical contrivances which he employs, will be found at p. 264-278.]

AFFECTIONS OF THE SKIN, &c.

Acne *of the Face.*—Apply a saturated solution of gutta percha in chloroform over the spots, enjoining the patient not to rub off the pellicle by washing. (Dr. R. J. Graves, p. 287.)

Boils.—To an adult afflicted with this painful furunculoid eruption, gave a tablespoonful of yeast with some water, three times a day. Smaller doses may be given for children. (Mr. J. E. Mosse, p. 294.)

Cicatrices from Burns.—Professor Fergusson in operating upon cicatrices after burns, after dividing the bands and dissecting them back, employs extension of the parts. In a case of the kind lately under his care, this mode of treating this unpleasant deformity was attended with complete success. (Prof. Fergusson, p. 294.)

Impetigo.—Apply the saturated solution of gutta percha in chloroform, by means of a camel's-hair pencil, over the patches daily. (Dr. R. J. Graves, p. 287.)

Lepra Vulgaris.—Use an alkaline bath once a week, and thin oatmeal gruel instead of soup. Give half-grain doses of iodide of potassium, and three minims of Fowler's solution three times a day, and apply night and morning, an ointment composed of the nitric oxide of mercury and lard, with a few drops of creasote added. (Mr. J. S. Tylor, p. 284.)

Lupus Exedens.—Apply a solution of nitrate of mercury in concentrated nitric acid with a glass brush over the whole diseased surface, including all the surrounding tubercles, and over this paint a thin coating of prepared collodion. The above solution is prepared by dissolving one ounce of mercury in two ounces of pure nitric acid. A teaspoonful of cod liver oil may be taken three times a day; and a pill every night containing one grain of calomel, with one-third of a grain of opium. (Mr. J. Startin, p. 292.)

Nævus.—Mr. Startin advocates a plan of treating this morbid condition, which he terms "elastic strangulation." It is effected by environing the tumour with a ligature passed by means of a long round needle beneath the skin, so as to include the morbid parts in a triangular space, which shall extend a line or so beyond the

boundaries of the nævus, care being taken that both ends of the thread (made of strong boot-closer's twist) have their exit at that apex of the triangle which is most conv niently situated, to allow an elastic band, half an inch wide, and two or three inches long, made of No. 16 vulcanized india-rubber sheeting, to be fastened upon them, so as to permit the necessary tension to be made upon the band, and thro gh it upon the subcutaneous thread surrounding the nævus. (Mr. J. Startin, p. 289.)

Onychia.—The late Mr. Colles, of Dublin, in a paper on some morbid affections of the great toe nail, divides them into three kinds: 1. The common onychia, or nail growing into the flesh, on its external edge. 2. The inner angle of the nail resting on a hard white mass of laminated horny cuticle, which may be picked out in bran-like scales, expo-ing a small cup-shaped cavity, without ulceration. 3. Onychia maligna depending on a morbid condition of the secreting matrix of the nail. In the first disease, only so much of the nail as is separated from the matrix, and imbedded in the fungus, is to be removed. This is done by pressing on the fungus with a spatula, raising the nail from it by a pair of strong forceps, and then by means of curved scissors passed underneath it, cutting it completely out. In the second it is to pick away the laminated scales and remove the bulbous end of the nail. In the third, the treatment is to keep the patient in bed, poultice the part for two or three days, then cleanse the ulcer thoroughly by means of a syringe and a stream of tepid water, and afterwards cutting away as much of the loose nail as can be done without irritating the surrounding sensitive surface. Lastly, fumigate, night and morning, by a means of a funnel, with the mercurial candle, which contains 3j. hyd. sulph. rubrum to ℥ij. of wax. After each fumigation, the toe to be enveloped in a piece of lint spread with spermaceti ointment. (Mr. W. Tagert, p. 329.)

Foment the toe well with hot water, twice daily, for two or three days, then apply the nitrate of silver over the ulcerated surface, as well as underneath and over the nail. The advantage of applying it over the nail is, that its horny texture becomes so softened that it can be cut, if necessary, as easily as brown paper. The object of the application is not to procure excoriation, but a dry coating; therefore, the toe must be left exposed for half an hour after its application, and the fomentation is to be omitted for two days. The only other part of the treatment is to envelope the toe in a piece of dry lint. (p. 330.)

Apply a blister to the root and sides of the nail. (Dr. Kirk, p. 331.)

This disease is produced either by careless cutting of the nail or by wearing tight shoes,—the first must be avoided and the second corrected. After removing the sharp angle of nail which is often found imbedded in the fungous growth, the nail must be trained so that its angles over-lap the skin on each side, and be sufficiently long to support the soft parts at the extremity of the toe. (p. 329.)

Apply a safe and powerful escharotic, as the Vienna paste, to the fleshy fungus at the side of the nail. By the establishment of suppuration, the attachments of the nail become loosened, and the nail may be easily removed. (Dr. Moriarty, p. 328.)

Insert, as deeply as possible, calcined alum between the flesh and the nail, by means of a flattened stilét. Remove the crust which is formed, at first twice a day, and then once a day. If the crust is left, the purulent matter does not escape, and the disease persists indefinitely. The remedy must not be discontinued until the desiccation is complete, otherwise the disease renews itself. Moisture is eminently injurious, therefore poultices and foot-baths must be abstained from. (M. Somme, *Med. Times and Gazette, Oct.* 16, 1852, *p.* 396.)

Treat the parts with well adjusted pressure and escharotics. First apply the nitrate of silver, then a coating of the nitric oxide of mercury, then cut a piece of cork the size and shape of the nail, the concavity answering to its convexity, and bind it on firmly with adhesive plaster, taking care to press it upon the ulceration. Pain is experienced at the first dressing, but soon vanishes. It will not require to be dressed again for two, three, or four days. By this treatment, therefore, instead of the nail being removed out of the way of the flesh, the flesh is removed out of the way of the nail. (Mr. Lucy, p. 331.)

Psoriasis.—Apply a saturated solution of gutta-percha in chloroform; no woollen stockings or rough garment of any kind should be allowed next the skin, lest the application should be disturbed. (Dr. R. J. Graves, p. 288.)

AFFECTIONS OF THE BONES, JOINTS, &c.

AMPUTATIONS.—[A valuable series of observations on this subject by G. J. Guthrie, Esq., will be found at p. 141 extending to p. 163, which it would be impossible to condense in this synopsis.]

AMPUTATION *at the Ankle.*—Professor Syme states his having performed this operation above fifty times with complete success, the essential point of success being, his preserving entire the nourishment of the flap. As this can only be effected by the anastomosing branches of the integuments, the greatest possible care should be taken not to divide them. To the neglect of this caution Mr. Syme attributes the want of success which has attended some of the London surgeons in performing this operation. (Prof. Syme, p. 163.)

Above the Knee.—In making the flaps in this operation, Mr. Luke makes the posterior flap by *piercing* and cutting from within outwards; but the anterior flap is made in the opposite manner, by carrying the knife in a curved direction antero-posteriorly through skin and muscle down to the bone. The flaps can be thus made with the greatest regularity exactly to the size best calculated to make a good stump, forming a thick, symmetrical, and clean cushion for the bone. (Mr. J. Avery, p. 165.)

BURSAL TUMOURS.—In a case of enlarged bursa over the wrist joint, after the usual vesicant and stimulating applications had been employed with no good effect, Mr. Stanley made a free incision into the swelling, the glairy fluid was evacuated, tents of lint were introduced into the wound, and the whole hand enveloped in a poultice. In the common *enlarged bursa patellæ*, perhaps the best plan is to draw off the contained fluid by means of a small trocar, then apply a small blister or a strong solution of iodine, and ultimately support the part with a mercurial plaster and bandage. The practice, by means of setons, of converting these enlargements into acute abscesses, very often produces disagreeable consequences, and it would appear that recently formed cases are especially ill adapted for this mode of treatment. The most suitable are, perhaps, the very chronic ones which have resisted ordinary measures. In all cases of enlarged bursa where the knife is resorted to, it is important to remember that the incision can scarcely be too free. (Mr. E. Stanley, p. 121.)

Enlarged Superficial.—Make a free incision into the bursal tumour and let out the contents, and then apply a strong solution of iodine by means of a camel's-hair pencil to the interior of the sac. Insert a strip of lint into the wound, and keep it there, so that inflammation and suppuration may ensue and the cavity be obliterated. (Mr. H. Smith, p. 122.)

DISLOCATION *of the Thumb Backwards.* First make traction by means of Charriere's forceps in the direction of the axis of the first metarcarpal bone. When the posterior portion of the phalanx is brought to the level of the metacarpal surface, by imparting a rotatory movement inwards, and then employing flexion, reduction is easily accomplished. The inward rotatory movement disengages the metacarpus from the external band of muscles that surround it, and enables them to slide in front of its head. (M. Demarquay, p. 123.)

FRACTURES.—[The remarks of Mr. G. J. Guthrie on the treatment of compound fractures are given at p. 130.]

FRACTURE, *Ununited.*—Several cases which were treated by polished ivory pegs being driven into the extremities of the fragments of the bones, and in which perfect bony union was obtained, are recorded in article No 66, p. 125.

GANGLION.—Pass a small needle armed with a single thread of silk through the tumour, and leave it there for a few days until suppuration is established. The limb should not be exercised lest too violent inflammation be established. When suppuration occurs, a poultice should be applied. (Mr. H. Smith, p. 123.)

VENEREAL AFFECTIONS.

BOUGIES, *Aluminized.*—In stricture, combined with chronic inflammation, these bougies are of great value in procuring *dégorgement* of the mucous membrane. This is effected generally in from seven to twelve days, when the dilatation of the

stricture is then proceeded with. They are prepared by warming the end of wax bougies, and then incorporating with them some powdered alum, so as to form a kind of magma of the wax and alum. (M. Jobert, p. 284.)

Gonorrhœa.—Let a mixture of half chloroform and half mucilage be injected into the urethra three times a day. If this should be too painful let it be diluted by adding more mucilage. (Mr. H. Behrend, p. 280.)

[The above treatment is strongly objected to by Mr. F. I. Keene, see p. 281.]

Mr. Lloyd, of St. Bartholomew's, and Mr. Poland, of Guy's hospital, have treated several cases of gonorrhœa by M. Jozeau's Copahine-Mège (or saccharated capsules of copaiba), an account of which will be found at p. 282.

Syphilis.—A comparison of the *simple* treatment of syphilis with the *mercurial* treatment, is given by Professor Bennett, with statistics to prove the great superiority of the former plan, at p. 278.

AFFECTIONS OF THE EYE.

Cataract, *Congenital.*—The best time for the operation in these cases is between the second and fourth month; it should not be delayed beyond the fourth or fifth month, as the eyes speedily acquire that restless seeking after light, which is characteristic of such cases, and which greatly interferes with the operation. Sir Charles Bell says that belladonna is of no use, as it may endanger the falling forward of the lens, which might produce severe irritation by coming in contact with the iris. Mr. White Cooper states, however, that it is of decided use, as it does not endanger the iris from this cause, and that if the needle be properly used, there need be little fear of this accident, but that if from any unforeseen circumstance it should occur, it is far better that the mass should not be bulged against the iris, which is prevented by its dilatation being effected by means of the belladonna. (Mr. W. W. Cooper, p. 295.)

Opaque Capsules, *to remove from the Eye.*—Instead of using one cataract needle for the purpose of dividing and removing the false membrane, and which commonly stretches and injures the neighbouring structures, Mr. Bowman has effected this object by a very simple method. He introduces two needles through different points in the cornea, down to the band of membrane; one acts as a fixed point, while with the other the membrane is torn across, and the fragments carried to opposite sides of the pupil, thereby avoiding the laceration produced by the ordinary operation. (Mr. W. Bowman, p. 298.)

Nitrate of Silver, *mode of applying to the Eye.*—When a solution of nitrate of silver is applied to the eye, it should not simply be dropped into one angle, but the lid should be separated from the eyeball, and the solution dropped between them; in this way it becomes diffused over its surface. In the same way any ointment which is intended to be applied to the conjunctiva, must be inserted in requisite quantity under the upper lid. It is only in inflammation of the conjunctiva, or in superficial inflammation of the cornea, that these stimulating applications are necessary, and if the disease in either case does not soon yield to these topical applications, more ill than good is likely to result from their persistence, and some modification of the treatment must be adopted, suggested by the circumstances of the case. (Dr. W. Jones, p. 305.)

MIDWIFERY AND THE DISEASES OF WOMEN.

Ovarian Dropsy.—Before any operation is resorted to in this disease, it is essential that the patient should be in a tolerably healthy condition. Before concluding on the treatment, we should first decide whether the sac is of an uni- or multilocular character, the presence or absence of adhesion, and in some degree the nature of its contents, density, &c. Our diagnosis will be much more secure by puncturing the cyst and examining the fluid; this is generally requisite where pressure and tapping have failed. This incision will be best made in the semilunar cartilage, and may be two or three inches in length. If by this incision it is

found that the sac is simple and not adherent, then we may tap again, and endeavour to withdraw the entire sac, or empty the sac, and then cut a piece out of it and return it. If the sac is multilocular and not adherent, we have still ovariotomy as a dernier ressort. If the sac is adherent, then we may make an 'artificial induct,' that is we may make a fistulous opening into the sac, through which it may constantly discharge itself, and finally slough away. Where the sac is of great hardness and density, the idea of operating may be laid aside, for no good can come of it. The most favourable fluid content of ovarian sacs is where it is limpid, pale, or straw-coloured, containing very little albumen. Where albumen is in great abundance, our treatment must be rather palliative; and pressure after tapping is the most effectual palliative in such cases, retarding, as it will even in them, the fatal progress of the malady. (Mr. I. B. Brown, *Lancet, July* 31, 1852, *p.* 98.)

Mr. I. B. Brown's new operation for treating ovarian dropsy consists of excising a portion of the sac, returning the remaining portion into the peritoneal cavity, and closing the wound by sutures, allowing any fresh portion of the fluid secreted by the remainder of the cyst to escape into the peritoneal cavity, and to be there taken up by absorption, and discharged by the kidneys. This plan was brought to Mr. Brown's mind by reflecting upon the numerous cases in which a spontaneous cure followed an accidental rupture of the cyst, succeeded by a copious discharge of urine. Mr. Brown relates three cases thus treated, which, though followed by severe peritonitis, ultimately did well. (*Lancet, June* 5, 1852, *p.* 544.)

Instead of tapping for this disease in the sitting posture, let the patient be placed in the horizontal position. If it can be ascertained which is the ovary diseased, the patient must be laid on the left or on the right side accordingly, the distended ovarian sac projecting, if possible, over the edge of the bed. (Dr. Simpson, *Monthly Journal, Oct.* 1852. *p.* 361.)

Inversion of the Uterus.—The reduction of a chronic case of inversion of the uterus under the influence of chloroform, is recorded in the 'Med. Times and Gazette,' by Dr. Merriman, which is taken from the 'Archives Générales de Médicine' for May, 1852. It occurred in the 'Hôtel Dieu,' of Lyons, under the care of M. Barrier, Surgeon in chief to the Hospital. (Dr. S. W. J. Merriman, p. 313.)

Polypus Uteri, *Intra-Uterine.*—When the womb remains large and bulky after delivery, and when we are satisfied there is not another ovum, although we may suspect the presence of a polypus, we are decidedly not justified, so long as no alarming symptoms occur, in endeavouring to make out exactly by manual interference, whether such is the case or not, or in arousing the uterus to contraction by the exhibition of the ergot of rye. The system of non-interference must be pursued; the safety of the patient consists in the quiescence of the uterus. To insure this, strict rest, mild sedatives, and the avoidance of all local irritation should be enforced. But, if, in spite of all endeavours, it be necessary to remove the polypus, the best plan is, if the pedicle is small to twist it off. If, however, it occur at a time when physical injury to the uterus may be hazardous, the ligature should be applied to the pedicle to prevent hemorrhage, and then the body of the polypus removed with the knife. (Dr. Oldham, p. 316.)

MISCELLANEA.

Cathartic.—Give two grains of calomel with ten or twenty grains of bicarbonate of soda. After the bowels and liver have been well acted upon, the medicine loses its power and should be discontinued. The soda seems to exert some influence in preventing the mercury acting upon the gums. (Dr. Hunt, p. 325.)

Chloroform.—Mr. Le Gros Clark, assuming that sensation and volition are simultaneously suspended, gives his patient to understand, that when he ceases (after being commanded to do so) to make some voluntary effort, such as squeezing the hand of an assistant or raising his hand, the operation will be commenced. This he thinks is the best plan of affording a sure and simple criterion of what is a sufficient dose of the anæsthetic. (p. 324.)

Local application of.—When applied to any painful part, the phial containing it should be inverted upon a handkerchief, so as to wet a spot upon its centre. Hav-

ing done this two or three times, it should be applied to the seat of pain, with moderate pressure, and without friction. Some redness and tingling in the parts are produced, but these soon disappear when the handkerchief is removed. To prevent evaporation or inspiration of the chloroform, the cloth should always be covered with another dry one. (Dr. Channing, p. 324.)

Resuscitation from.—In a case of great danger from the inhalation of chloroform, after all other remedies had failed, galvanic shocks were passed over the chest and top of the spine, at the origin and insertion of the phrenic nerves, and continued during two or three minutes. This produced the happiest results. The tendency to relapse into insensibility after the use of galvanism, was prevented by dashing cold water occasionally in the face, together with the internal administration of the same fluid. (Mr. J. Hilton, p. 164.)

Dr. John Snow is of opinion, that if artificial respiration were put in force within half a minute after the breathing had ceased from the effects of chloroform, the patient would, in many cases, be restored. (*London Journal of Medicine, June* 1852, *p.* 568.)

Cod Liver Oil, *mode of taking.*—Let it be taken in a simple weak infusion of quassia. This would seem the more valuable as it is itself a mild and agreeable tonic bitter, assisting in improving the tone of the general system. (Mr. G. S. Morris, p. 327.)

Manganese.—Manganese seems to be of similar value to iron in those diseases characterized by that condition of the system termed anæmia. Ferro-manganese salts are now obtainable in Paris, the only drawback being their high price. (MM. Petrequin and Burin, p. 326.)

Iodine.—Instead of applying iodine by means of friction, in the form of ointment, to the neck in the case of goitre, M. Hannon recommends it to be tied over the part, between two layers of cotton wool in a bag. To prevent its staining the linen, a small piece of gummed silk may be placed over the bag. (*Med. Times and Gazette, Sept.* 4, 1852, p. 242.)

Leeches, *mode of applying.*—Place the leeches on the skin and slightly exhaust the air around them by means of a cupping glass placed over them, after the air is rarefied in it in the ordinary manner. (Dr. C. F. Sloan, p. 327.)

Styptic (M. Pagliari's).—This styptic liquor, which seems to have abundant testimony in its favour, is composed as follows:—Eight ounces of tincture of benzoin, one pound of alum, and ten pounds of water, are boiled together for six hours in a glazed earthen vessel, the vaporized water being constantly replaced by hot water, so as not to interrupt the ebullition. The resinous mass is to be kept stirred round. (*Med.-Chir. Review, Oct.* 1852, *p.* 557.)

Poisoning *by Laudanum.*—To evacuate the stomach speedily and effectually, introduce into it a quantity of carbonate of soda, followed by vinegar. The effervescence is so powerful that all the contents of the viscus are discharged. If emetics have before been taken ineffectually, they begin now to act. (Dr. E. Buck, *American Journal of Med. Sciences, Jan.*, 1852, p. 117.)

By Strychnine.—In a case of poisonous symptoms being induced from an over-dose of strychnine given in mistake, the following prescription gave immediate relief; 24 grains of camphor were dissolved in six ounces of almond mixture, one-fourth to be taken every two hours. (Dr. Pidduck, *Lancet, July* 24, 1852, p. 80.)

Lead Poisoning.—In addition to the acid. sulph. aromat., mercury is exceedingly valuable in controlling the effects of, or removing this and other latent poisons from the body. (Dr. Fenner, *Med.-Chir. Review, Oct.* 1852, p. 345.)

From Snake Bite.—The late M. Lisfranc spoke in the most unqualified manner of the success following the free application of ammonia to the wound, and its free administration internally. (Dr. R. Barnes, p. 335.)

From Bite of the Cobra de Capello.—D. Cole, H.E.I.C.S., adds his testimony to the great value of ammonia administered internally in cases of bite from this snake. He prefers the liq. ammon. fort., (P. L.) in doses of ten to twenty drops. He also states his belief that it is exceedingly dangerous to suck the poison from the wound, as, in his opinion, the deleterious principle of the poison is not neutralized by the gastric juice. (p. 334.)

Give a teaspoonful of sp. ammoniæ aromaticus in a little water every five

minutes. Dr. Mac Rae, when bitten by this snake, took 13 teaspoonfuls in this manner; every dose seemed to give some relief. In three hours he was out of danger. (Mr. E. Hickman, p. 437.)

It is now acknowledged that suction from the wound, or the actual cautery, or if possible, a tight ligature, combined with every means to combat torpor, ought to form the basis of the treatment. (Mr. Quain, *Lancet*, *Oct.* 30, 1852, p. 397.)

In twenty cases of this nature, hot brandy and water was immediately administered along with peppermint and laudanum. Not one case was lost. (p. 336.)

INDEX TO PART XXVI.

	Page
Abdomen, Mr. A. Blacklock's case of wound of	194
Adams, Mr. J., on calculi in the female bladder	249
Ague, M. Aran's terebinthinate liniment for	26
Air-passages, Dr. Cotton's instrument for topical applications to	70
" Dr. H. Green on topical medication in diseases of	60
" Dr. T. Thompson's instrument for topical application to	70
" Dr. E. Watson on topical medication in diseases of	63
Albuminuria, temporary, Dr. Begbie on	28
Amalgam for filling decayed teeth	172
Amaurosis cured by strychnia endermically	305
Ammonia, its efficacy as an antidote for snake-bite	334
Amputation of the thigh, Mr. Brownrigg's operation	143
" of the thigh, Mr. Luke's operation	145
" of the thigh at the hip-joint, Mr. Guthrie on	143
" of the thigh by the circular operation, Mr. Guthrie on	144
" of the thigh by the flap operation, Mr. Guthrie on	145
" of the thigh above the knee, Mr. Avery on	165
" of the leg at the knee-joint, Mr. Guthrie on	148
" of the leg below the knee, Mr. Guthrie on	150
" of the leg by the circular and flap operations, Mr. Guthrie on	148
" of the foot at the ankle-joint, Mr. Guthrie on	151
" of the foot at the ankle-joint, Prof. Syme on	163
" of the foot at the tarsus, Mr. Guthrie on	152
" of the metatarsal bones, Mr. Guthrie on	154
" of the upper extremities, Mr. Guthrie on	154
" of the arm at the shoulder-joint, Mr. Guthrie on	156
" of the arm below the tuberosity of the humerus, Mr. Guthrie on	158
" of the arm at the elbow-joint, Mr. Guthrie on	160
" of the fore-arm, Mr. Guthrie on	160
" of the hand at the wrist, Mr. Guthrie on	161
" of the fingers, Mr. Guthrie on	161
" of little finger, Mr. Hilton's case of	164
" protrusion of the bone after, Mr. Guthrie on	146
Amputations, on the necessity for tourniquets in	141
" secondary, Mr. Guthrie on	162
Amyot, Mr. T. E., his case of sarcina ventriculi	87
Ankle-joint, Prof. Syme on amputation at the	163
" Mr. Guthrie on amputation at the	151
" Mr. Guthrie on excision of the	150
Anthelmintics, Dr. Merei on	90
Aran, M., his treatment of ague	26
Arm, Mr. Guthrie on amputation of	158
Artificial foot, M. de Beaufoy's	154
Ascaris lumbricoides, remedy for, in children	90
" vermicularis, remedy for, in children	90
Astragalus and calcis, Mr. Wakley's operation for removal of	153
Avery, Mr. J., on amputation above the knee	165
Bagot, Dr., on a substitute for cod-liver oil	76
Banks, Dr., his case of chorea treated by chloroform	34
Barlow, Dr., on irritable rectum, treated by opiates	196
Bauer, Dr., on the medical uses of urate of ammonia	293
Beck, Dr. T. S., on the term ulceration as applied to uterine diseases	314
Becquerel and Rodier, MM., on the influence of chronic diseases on the blood	27
Begbie, Dr. J. W., on temporary albuminuria occurring in certain acute diseases	28
Behrend, Mr. H., on chloroform injections in gonorrhœa	280
Bennett, Prof., on cirrhosis of the liver	94
" on diabetes	106
" on eruptive fevers	20
" on fatty enlargement of the liver	98

	Page
Bennett, Prof. on the treatment of syphilis	278
Blacklock, Mr. A., his case of wound of the abdomen	194
Bladder, Prof. Gross on paralysis of	110
" Prof. Gross on the treatment of nervous affections of	109
" paralysis of, Dr. Lever's treatment of	342
" puncture of, through the rectum for retention of urine	250
" puncture of, through the symphysis pubis	251
Bland, Mr. W., on placenta prævia	312
Blood, influence of chronic diseases upon the composition of the	27
" on the mixture of fibrinous deposits with the	44
Boils, Mr. J. R. Mosse on the use of yeast in the treatment of	294
Bone, treatment of cases of long continued pain in	141
Bones, mode of applying pressure in chronic enlargement of	140
Bonnet, M., on the treatment of varicocele	263
Bothriocephalus latus cured by the oil of male fern	88
Bougies, aluminized, M. Jobert on the use of	284
Bowels, Dr. Oke on the spasmodic action of the	82
Bowman, Mr. on removal of opaque capsule from the eye	298
Brewning, Dr., on the use of tannin in hooping-cough	71
Bright's disease, on the symptoms of	107
Broxholm, Dr. his new apparatus for reducing dislocations	124
Budd, Dr. G., on congestion of the liver	94
" Dr. G., on the treatment of jaundice	95
" Dr. W., on the treatment of croup	73
Burrows and Kirkes, Drs., on chronic degeneration of the kidneys	101
Bursa, superficial, Mr. H. Smith's treatment of	122
Bursæ, on the treatment of	120
Butcher, Mr. R. G. H., on wounds of the palmar arch	167
Cachexia eczematosa, Dr. W. S. Oke on the treatment of	292
Calculi in the female bladder, Mr. J. Adams' case of	249
Calculus, Dr. J. F. May's case of	246
Calomel and soda as a cathartic, Dr. Hunt on	325
Cancer, Mr. Paget on the statistics of	28
Cataract, Mr. J. Dalrymple on the operation for	298
" M. Langier's new instruments for	299
" congenital, Mr. W. W. Cooper on the operation for	295
Cathartic, on calomel and soda as a	325
Cauterization of the glottis in hooping-cough, results of	71
Cazenave, M., his treatment of facial neuralgia	43
Channing, Dr., on the external use of chloroform	320
Chapman, Mr. H. T., on puncturing the bladder through the symphysis pubis	231
Chemistry and pathology of the urine, Dr. Hassall on	100
Chlorate of potass in croup	76
Chloroform, Dr. Channing on the external use of	320
" Dr. Snow's plan for resuscitation from	349
" Mr. Le Gros Clark's hints on the administration of	324
" case of chorea treated by	34
" dangerous symptoms after use of, in amputation	164
" injections in the treatment of gonorrhœa	280
" " in gonorrhœa, objections to the use of	281
" its use in delirium tremens	43
Cholagogue medicines, their action on the liver	92
Cholera, Asiatic, on the occurrence of albuminuria in	24
Chorea, Dr. Banks's case of, treated by chloroform	34
" Dr. R. B. Todd's cases of	35
" Dr. R. B. Todd on the pathology of	37
" Dr. R. B. Todd on the treatment of	37
" Dr. Schoepf-Merei on ammonio-sulphate of copper in	39
Christensen, Prof., on Bright's disease of the kidney	107
Chronic diseases, their influence on the composition of the blood	27
Cicatrices from burns, Prof. Fergusson on the treatment of	294
" Mr. Tamplin on the treatment of	294
Cirrhosis of the liver, Dr. C. H. Jones on	90
" Prof. Bennett on	93
Clark, Mr. Le Gros, on the administration of chloroform	324

	Page
Cobra de capello, antidotes for the bite of	334
Cod-liver oil, Dr. Bagot's substitute for	76
" Mr. G. S. Morris's new mode of taking	327
Collapse, case of, treated by turpentine	325
Congestion of the liver, Dr. Budd on	94
Cooper, Mr. B. B., on hydrocele	253
" Mr. B. B., on the treatment of hernia	179
" Mr. W. W., on the operation of congenital cataract	295
Copahine-mège, a new preparation of copaiba	282
Copper, ammonio-sulphate of, its use in chorea	39
Cotton, Dr., his instrument for topical medication of the larynx	70
Coulson, Mr. W., his case of traumatic stricture of the urethra	213
" Mr. W., on lithotomy and lithotrity	222
" Mr. W., on stricture of the urethra and perineal section	199
Croup, Dr. W. Budd on the morbid anatomy and pathology of	71
" Dr. W. Budd on its treatment by warm vapour and emetics	73
" Mr. Sankey's cases treated by chlorate of potass	76
Dalrymple, Mr. J., on the operation for cataract	298
Delirium trémens, Dr. Rogan on the use of chloroform in	43
Demarquay, M., on a new mode of reducing dislocation of the thumb	123
Dental nerve, Dr. Roberts' process for cauterizing	175
Desquamative condition of the kidney	98
Diabetes, Prof. Bennett on	106
" M. Reynoso's theory of the presence of sugar in urine	112
Diarrhœa, cases of, treated by sulphuric acid	86
" use of matico in	87
" use of sulphuric acid in	84
Dieffenbach's method of treating ununited fractures	125
Dislocations, Dr. Broxholm's apparatus for reducing	124
" of the thumb, M. Roux's method of reducing	123
Dixon, Mr. J., his remarks on diseases of the eye	300
Dropsy following scarlatina, on the occurrence of albuminuria in	24
Dundas, Dr., his treatment of typhus by quinine	17
Dunglison, Prof., his lecture on stammering	40
Dysentery, use of sulphuric acid in	84
Ear, Mr. W. R. Wilde on diseases of	306
Elbow-joint, Mr. Guthrie on excision and amputation of	159
Emphysema from fractured ribs	135
Epilepsy, on the relation of laryngismus to	42
Epistaxis, M. Reveille-Parise on the treatment of	169
Erectile tumour of the neck cured by vinous injections	170
Erysipelas, Prof. Bennett on the treatment of	22
Erysipelatous affection of the throat, case of	77
Excision of the ankle-joint, Mr. Guthrie on	150
" elbow-joint, Mr. Guthrie on	159
" head of the humerus, Mr. Guthrie on	158
" knee-joint, Mr. Guthrie on	148
" os calcis, Mr. Guthrie on	150
Eye, Mr. J. Dixon's remarks on diseases of	300
" on the removal of opaque capsule from	298
" on the use and abuse of nitrate of silver drops to the	305
Eye-speculum, Prof. Helmholtz's	201
Farcinomatous inflammation, use of sesquicarbonate of ammonia in	337
Fatty degeneration of the liver, Prof. Bennett on	93
" Dr. C. H. Jones on	92
Fergusson, Prof., his treatment of cicatrices from burns	294
" Prof., on the operation for strangulated hernia	176
Fevers, eruptive, Prof. Bennett on	20
Fevers, intermittent, causes of	337
Fibrinous concretion, Dr. Garstang's case of death from	47
" deposits, on their detachment from the heart and mixture with the blood	44
" concretions on the lining membrane of veins, Mr. Lee on	48
Finger-joints, Mr. Guthrie on amputation at	162
Fistula, vesico-vaginal, Dr. J. M. Sims on the treatment of	264
" in ano, Mr. E. Lacy on chloride of zinc paste in	194

	Page
Foot, Mr. Guthrie on amputation of	138
" on removal at the ankle-joint	141
Foot, gangrene of, Mr. Solly's observations on	166
Fore-arm, Mr. Guthrie on amputation of	140
Fracture, compound, Mr. Guthrie on the treatment of	130
" gun-shot, treatment of, Mr. Guthrie on	131
" of the arm, gun shot, treatment of	134
" of the patella, compound, Mr. Guthrie on	147
" of the ribs connected with emphysema	138
" of the thigh, treatment of	130
" ununited, Dr. Mott on the use of the seton in	130
" " cases treated by Dieffenbach's ivory pegs	128
Gadus carbonarius oil as a substitute for cod-liver oil	76
Gallic acid, its use in hæmoptysis	51
Galvanism in a case of danger from chloroform	104
" use of in cauterizing the dental nerve	175
Gangrene of the foot from exposure, Mr. Solly on	166
Garstang, Dr. W., his case of death from fibrinous concretion	47
George, Mr. H., on local treatment in confluent small-pox	200
Gerson, Dr. G., his new method of performing tracheotomy	326
Gonorrhœa, Mr. Behrend on chloroform injections in	280
" cases of, treated by M. Jozeau's copahine-mège	282
" objections to the use of chloroform injections in	281
Gonorrhœal rheumatism of the joints	120
Graves, Dr. R. J., on the use of gutta percha in skin diseases	286
Green, Dr. H., on topical medication of the larynx	60
Gross, Prof., on the treatment of nervous affections of the bladder	109
" Prof., on the treatment of paralysis of the bladder	110
Gull, Dr. W. W., his case of Bothriocephalus latus	88
Guthrie, Mr. G. J., on amputations	141
" Mr. G. J., on secondary amputations	169
" Mr. G. J., on the treatment of compound fractures	130
Gutta percha, application of, in skin diseases	286
Guyon, M., his report of a case of hydrophobia	88
Halford, Mr. G., his experiment on the sounds of the heart	50
Harelip, Mr. Quain's treatment of	171
Hassall, Dr. A., on the chemistry and pathology of the urine	100
Headache, Dr. Simpson's remedy for in amenorrhœa	326
Heart, Dr. Billing's theory of the sounds of the	50
" Mr. Halford's experiment on the sounds of the	50
Heartburn and indigestion, on the severer forms of	80
Hemicrania, M. Cazenave's treatment of	42
Hemoptysis, Dr. Bayes on gallic acid in	51
Hemorrhage, unavoidable, Dr. Murphy on the treatment of	312
" uterine, Dr. Murphy on	310
Hernia, Mr. B. B. Cooper on the treatment of	179
" Mr. W. Pirrie on the treatment of	182
" strangulated, Prof. Fergusson on the operation for	176
Hill, Mr. J., his cases of diarrhœa treated by sulphuric acid	86
Hip-joint, Mr. Guthrie on amputation at	143
Hilton, Mr. J., his case of danger from chloroform	104
" his case of intestinal obstruction	185
" his case of retention of urine	216
" his remarks on dilatation of the urethra	219
" on fractured ribs connected with emphysema	135
" on puncturing the bladder through the rectum	250
Holt, Mr. B., his stricture dilator	216
Hooping-cough, on the use of tannin in	71
" results of cauterization of the glottis in	71
Humerus, Mr. Guthrie on excision of the head of	158
Hunt, Dr. H., on calomel and soda as a cathartic	325
" on the severer forms of heartburn and indigestion	80
Hydrocele, Mr. B. B. Cooper on	252
" congenital, Mr. B. B. Cooper on	257
" encysted, Mr. B. B. Cooper on	260

	Page
Hydrophobia, Dr. Lawrie on a case of	29
" M. Guyon's report on a case of	33
" on the morbid anatomy and pathology of	32
" on the treatment of	35
Incontinence of urine, treatment of	110
Indigestion, Mr. Spurgin's remedy for	67
" and heartburn, on the severer forms of	80
Inflammation of joints, Mr. Stanley on	116
Inman, Dr., his mode of applying pressure in chronic enlargement of bones	140
Intermittent fever not caused by miasmata	327
Intestinal obstruction, Mr. Hilton's case of	185
Iodine, new mode of applying locally	349
Itch, M. Devergie's objections to the rapid cure of	293
Jaundice, Dr. C. H. Jones on	92
" Dr. G. Budd on the treatment of	95
Jobert, M., on cauterization of the glottis in hooping-cough	71
" on the use of aluminised bougies	284
Johnson, Dr., on the pathology and diagnosis of renal diseases	98
Joints, Mr Solly on diseases of the	113
" Mr. Stanley on scrofulous and rheumatic inflammation of	116
Jones, Dr. C. H., on the structure, function, and diseases of the liver	90
" Dr. T. W., on the use and abuse of nitrate of silver drops to the eye	305
Keene, Mr. F. I., his objections to the use of chloroform injections in gonorrhœa	281
Kidney, Prof. Christensen on Bright's disease of the	107
" chronic degeneration of and its consequences	101
" phenomena of desquamation of	98
Kirkes, Dr. W. S., on effects of detachment of fibrinous deposits from the heart	44
Knee-joint, Mr. Guthrie on excision of	146
" Mr. Guthrie on the treatment of fractures of	147
" excision of, Mr. Jones's operation for	148
Lacy, Mr. E., on the use of chloride of zinc paste in fistula in ano	194
Langier, M., his new instruments for cataract	299
Laryngismus, Dr. Watson on its relation to epilepsy	42
Larynx, Dr. Cotton's instrument for tropical applications to	70
" Dr. H. Green on the topical medication of the	60
" Dr. T. Thompson's instrument for topical applications to	70
" Dr. E. Watson on the topical medication of the	63
Lead poisoning, remedy for	349
" symptoms and treatment of	83
Lee, Mr. H., on fibrinous deposits on lining membrane of veins	48
" on some obscure cases of long-continued pain in bone	141
Leeches, Dr. C. F. Sloan on a new mode of applying	327
Leg, amputation of by the circular and flap operations	148
Lepra alphos, treatment of	285
" vulgaris, Mr. Tyler's treatment of	284
Lithotomy, Mr. Coulson on the lateral operation of	235
" and lithotrity, Mr. W. Coulson on	222
Lithotrity, Mr. Coulson on the operation of	226
Liver, Prof. Bennett on fatty enlargement of	93
" cirrhosis of, Prof. Bennett's remarks on	94
" congestion of, Dr. Budd's remarks on	94
" on the diseases of	92
" on the function of	91
" on the structure of	90
Lloyd, Mr. E. A., his cases of bursæ of the patella	122
Lupus exedens, Mr. J. Startin's treatment of	292
M'Evers, Dr. F., on the treatment of typhus by quinine	17
Mackenzie, Dr. T. W., on stomatitis ulcerosa of children	95
Male-fern oil, a remedy for Bothriocephalus latus	88
Manganese, MM. Petrequin and Burin on the use of	328
Matico, its use in diarrhœa	87
May, Dr. J. F., his case of large calculus, successful operation for	246
Merei, Dr. S., on anthelmintics	90
" on the treatment of chorea	39
Merriman, Dr. S. W. J., on artificial dilatation of the os uteri	302

	Page
Merriman, Dr., on re-inversion of the uterus	313
Metatarsal bone, amputation of	154
Miasmata, on the action of ozone on	26
Modonini, M., on the use of matico in diarrhœa	87
Moore, Mr. W. J., on a new method of treating strictures of the urethra	212
Mosse, Mr. J. R., on the use of yeast in the treatment of boils	294
Mouth, inflammation of in children	95
Murphy, Dr., on unavoidable hemorrhage	312
" on uterine hemorrhage	310
Nævus cured by subcutaneous strangulation	289
Nephritis, desquamative, phenomena of	98
Neuralgia, facial, M. Cazenave's treatment of	43
" of the bladder, treatment of	109
Nitrate of silver, Dr. T. W. Jones on the use and abuse of, to the eye	305
Oke, Dr. W. S., on cachexia eczematosa in children	292
" on spasmodic action of the bowels	82
Oldham, Dr., his case of intra-uterine polypus, cured spontaneously	316
Onychia, Dr. Moriarty's treatment of	328
" Mr. A. Colles' description and treatment of	328
" Mr. Lacy's treatment of	331
" Mr. Tagert's treatment of	328
" M. Somme's treatment of	345
Opaque capsule, Mr. Bowman on removal of, from the eye	298
Os calcis, Mr. Guthrie on removal of the	150
Os uteri, Dr. S. W. J. Merriman, on artificial dilatation of	309
Ovarian dropsy, Prof. Simpson on tapping for	348
" Mr. I. B. Brown's treatment of	347
Ozone, M. Schonbein on its action on miasmata	26
Paget, Mr. J., on the statistics of cancer	28
Palmar arch, Mr. Butcher on the treatment of wounds of the	167
Paralysis of the bladder, treatment of	110
Perineal section, Mr. W. Coulson on	199
" Mr. Wade's remarks on	210
Pirrie, Mr. W., on hernia	182
Placenta prævia, Mr. W. Bland's treatment of	312
Pneumonia, Dr. R. B. Todd's cases and treatment of	52
" on the fatality of	58
" on the occurrence of albuminuria in	25
Polypus, intra-uterine, Dr. Oldham's case of	316
Poisoning from the bite of the cobra de capello	334
" by laudanum, emetic for	349
" by lead, remedy for	349
" symptoms and treatment of	83
Poisoning by strychnine, remedy for	349
Prostate, enlarged, use of sal ammoniac in	111
Quain, Mr. R., his case of complicated hare-lip	171
" on diseases of the rectum	187
Quinine, its efficacy in the treatment of typhus	17
" to disguise the taste of	326
Rectum, Mr. R. Quain on diseases of	187
" irritable, with constipation, Dr. Barlow's treatment of by opiates	196
Renal diseases, Dr. Johnson on the pathology and diagnosis of	98
Rheumatic inflammation of the joints	119
" synovitis causing anchylosis	120
Rheumatism, articular, Mr. Stanley on	119
" gonorrhœal, Mr. Stanley on	120
Riberi, M., on the cure of amaurosis by strychnia	305
" on the treatment of erectile tumours	170
Richardson, Mr. B. W., his new stethoscope	77
Roberts, Dr. W. A., his process for cauterizing the dental nerve	175
Robertson, Mr. W., on the best materials for filling teeth	172
Rogan, Dr. W., on the use of chloroform in delirium tremens	43
Retention of urine, puncture of bladder by the rectum for	250
" puncture of bladder through the symphysis pubis for	251
Sal ammoniac, its use in enlarged prostate	111

	Page
Sanders, Dr. W. R., on Helmholtz's speculum for examining the eye	301
Sankey, Mr. E. F., on chlorate of potass in croup	76
Sarcinia ventriculi, Mr. Amyot's case of	87
Scarlatina, Dr. A. Wood's treatment of	21
" on the occurrence of albuminuria in	23
Schonbein, M., on the action of ozone on miasmata	26
Scrofulous habit, Dr. Tyler Smith on the signs of	28
" inflammation of the joints	118
Sheppard, Mr. E., on the treatment of diarrhœa and dysentery	84
Shoulder-joint, Mr. Guthrie on amputation at	156
Sims, Dr. J. M., on the treatment of vesico-vaginal fistula	264
Skin diseases, Dr. R. J. Graves on the use of gutta percha in	286
" Mr. J. S. Taylor on the present method of treating	284
Small-pox, M. Willemier on collodion to prevent pitting in	291
" confluent, Mr. H. George on local treatment in	290
Smith, Dr. Tyler, on signs of the scrofulous habit	28
" Mr. H., his treatment of enlarged superficial bursæ	122
Snake-bite, efficacy of ammonia as an antidote for	334
Solly, Mr. S., on diseases of the joints	113
" on gangrene of the foot	166
Spasmodic action of the bowels, Dr. Oke on	82
Splints for fractures of the arm	135
" for fractures of the leg and thigh	134
Spurgin, Mr. J., his remedy for indigestion	81
Stammering, Prof. Dunglison's lecture on	40
Stanley, Mr. E., his case of bursal turmour of the wrist-joint	121
" on inflammation of the joints	118
Startin, Mr. J., on the cure of nævus by subcutaneous strangulation	289
" on the treatment of lupus exedens	292
Stethoscope, Mr. Richardson's improved	77
Stomatitis ulcerosa of children, Dr. Mackenzie on the	95
Stricture of the urethra, Prof. Syme on	197
" Mr. W. Coulson on	199
" Mr. Moore's new method of treating	212
" traumatic, case of	213
Stricture dilator, Mr. B. Holt's	215
Styptic, M. Pagliari's, its composition	349
Sugar, its habitual presence in the urine of the aged	112
Sulphuric acid, its use in diarrhœa and dysentery	84
Syme, Prof. on amputation at the ankle-joint	163
" on stricture of the urethra	197
Syphilis, Prof. Bennett on the simple and mercurial treatment of	278
Tamplin, Mr., on the treatment of cicatrices from burns	294
Tannin, its use in hooping-cough	71
Tape-worm (bothriocephalus latus), Dr. Gull's case of	88
Teeth, on the best materials for filling	172
Todd, Dr. R. B., his cases of chorea	35
" his cases of erysipelatous affection of the throat	77
" his cases and treatment of pneumonia	52
Thigh, Mr. Guthrie on amputation of	144
Thigh-bone, case of strumous disease of	113
Thompson, Dr. T., his instrument for topical medication of the larynx	70
Throat, Dr. Todd's cases of erysipelatous affection of	77
Thumb, dislocation of, new mode of reducing	128
Toe-nail, ingrowing, on the treatment of	328
Tongue, tumours of, Mr. Erichson on the removal of	342
Tracheotomy, Dr. Gerson's new instrument for performing	336
Trousseau, M. on nocturnal incontinence of urine	110
Tumours, bursal, on the treatment of	120
" erectile, Prof. Riberi's treatment of	170
Turpentine, its use in collapse	325
Taylor, Mr. J. S., on the present method of treating skin diseases	284
Typhus fever, Mr. Hayward's cases treated by quinine	19
" on its treatment by sulphate of quina	17
" on the frequent occurrence of albuminuria in	25

	Page
Ulceration, Dr. T. S. Beck on its meaning as applied to uterine diseases	314
Ulcerative affections of the mouth in children	96
Ununited fracture treated according to Dieffenbach's method	126
Urate of ammonia, Dr. Bauer on the medical uses of	293
Urethra, Prof. Syme on stricture of	197
" Mr. Coulson's case of traumatic stricture of	213
" Mr. Hilton's remarks on dilatation of	210
" Mr. Moore's new method of treating stricture of	212
Uterine diseases, on the meaning of the term ulceration as applied to	314
" hemorrhage, Dr. Murphy on	310
" " on unavoidable	312
Uterus, Dr. S. W. J. Merriman on re-inversion of	313
Urine, M. Trousseau on nocturnal incontinence of	110
" alkaline, chemical explanation of	100
" habitual presence of sugar in, in aged persons	112
" on certain important points in the chemistry and pathology of	100
" retention of, Mr. J. Hilton's case of	216
Vanoye, M., on the treatment of enlarged prostate	111
Varicocele, M. Bonnet on the treatment of	263
Variola, Prof. Bennett on the ectrotic treatment of	22
Veins, on fibrinous deposits on the lining membrane of	48
Vesico-vaginal fistula, Dr. J. M. Sims on the treatment of	264
Watson, Dr. E., on the relation of laryngismus to epilepsy	42
" on the topical treatment of diseases of the air-passages	63
Whitby, Mr. C. W., on the efficacy of turpentine in collapse	225
Wilde, Mr. W. R., on diseases of the ear	306
Willemier, M., on collodion to prevent pitting in small-pox	291
Wood, Dr. A., his treatment of scarlatina	21
Worms occurring in children, treatment of	90
Wrist, Mr. Guthrie on amputation at	161
Yeast, its use in the treatment of boils	294
Zinc, chloride of, its efficacy in fistula in ano	194

THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY
W. BRAITHWAITE,
LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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CONTENTS OF PART XXVII.

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ARTICLE.		AUTHOR.	PAGE.
1	On Epidemic Diseases	*Dr. W. B. Carpenter*	17
2	On the Influence of Human Effluvia	*R. D. Grainger, Esq.*	21
3	On the Treatment of Fever by Large Doses of Sulphate of Quina	*Dr. A. W. Barclay*	23
4	On the Acute Specific Diseases	*Dr. W. Jenner*	26
5	On Belladonna as a Prophylactic in Scarlatina		
6	On the Fibrinous Constituent of the Blood in Relation to Disease	*B. W. Richardson, Esq.*	38
7	M Lebert on Cancer	*Dr. W. H. Walshe*	39
8	On the Treatment of Cancer	*MM. Devay, Manec, &c.*	41
9	On Rheumatism	*Dr. W. H. Fuller*	42
10	On the Pathology of Rheumatism and Gout	*Prof. Bennett*	45
11	Cases of Rheumatism treated by Lemon-Juice	*do.*	46
12	Infusion of the Leaves of the Ash-tree (Fraxinus polygamie) in Gout and Rheumatism	*Drs. Pouget & Peyraud*	47
13	On Fomentations of Digitalis in the Treatment of Certain Forms of Ascites	*M. Andral*	48

NERVOUS SYSTEM.

14	On Some of the Different Forms of Local Hysteria Resembling Neuralgia	*Dr. R. B. Todd*	48
15	On the Pathology of Affections Allied to Epilepsy	*Dr. C. B. Radcliffe*	55
16	On the Beneficial Effects of Strychnia in Impaired Spinal Energy	*Dr. Marshall Hall*	58
17	Formula for Tic Douloureux	*J. W. Beaumont, Esq.*	59
18	Treatment of Neuralgia	*M. Cazenave*	59

ORGANS OF RESPIRATION.

19	Illustrations of Laryngeal and Pharyngeal Diseases, which are Frequently Mistaken for, or Associated with, Phthisis Pulmonalis	*Prof. Bennett*	60
20	What is Tubercle? What is Phthisis?	*Dr. W. Jenner*	61
21	On Tuberculosis	*Henry Ancell, Esq.*	63
22	On Pulmonary Consumption	*Dr. R. Payne Cotton*	68
23	On the Cause of Tuberculosis, with Suggestions as to its Prevention	*Dr. J. G. Atkinson*	69
24	On the Application of Nitrate of Silver to the Fauces and Larynx		74
25	Affections of the Bronchial Mucous Membrane in Chronic Renal Disease	*Drs. Burrows & Kirkes*	74
26	On the Local Application of Cod-liver Oil		76
27	On the Use of Tracheotomy in Croup	*H. Smith, Esq.*	76

ORGANS OF DIGESTION.

28	On Mucous Membrane—Epithelium		81
29	On the General Pathology and Treatment of Dyspepsia	*Prof. Bennett*	82
30	On the Efficacy of Chlorate of Potash in Ulcerated Stomatitis and Cancrum Oris	*Dr. J. H. Babington*	83
31	On Chloroform in Sympathetic Vomiting	*Dr. T. Inman*	83

ARTICLE		AUTHOR	PAGE
32	On the Treatment of Sarcina Ventriculi	*Dr. Hassall, &c.*	83
33	On Chloroform in Colic, particularly in Lead Colic	*Dr. Aran*	84
34	Remarks on the Treatment of Diarrhœa by Sulphuric Acid	*S. W. North, Esq.*	85
35	On the Comparative Value of Anthelmintics	*Dr. Kuchenmeister*	86
	URINARY ORGANS.		
36	Action of Liquor Potassæ on the Urine in Health	*Dr. E. A. Parkes*	88
37	On the Presence of Pus in the Urine	*Dr. R. B. Todd*	89
38	On the Various Forms of Albuminifacient Renal Diseases	*Dr. G. Johnson*	92
39	On Bright's Disease of the Kidney	*do.*	97
40	On Phosphate of Lime in Oxaluria	*Dr. Kuchenmeister*	100
41	On the Nature and Treatment of Diabetes Mellitus, or Glucosuria	*M. Bouchardat*	101
42	On Permanganate of Potash in Diabetes	*G. Sampson, Esq.*	103
43	On Strychnine in Incontinence of Urine	*Dr. Panel*	104
	SURGERY.		
	BONES AND JOINTS.		
44	On the Treatment of Fractures of the Femur by a Simple Modification of Liston's Splint	*R. G. H. Butcher, Esq.*	105
45	On a Splint for Fractures of the Lower Extremities	*Dr. Wm. Highmore*	106
46	On Fractures of the Thigh	*J. T. Hester, Esq.*	109
47	Division of the Tendo Achillis in Certain Cases of Fracture of the Leg	*A. Shaw, Esq. &c.*	110
48	On a Case of Fracture of the Thigh-bone occurring spontaneously	*Dr. B. Van Owen*	111
49	Cases of Excision of the Knee-Joint	*Prof. Fergusson*	112
50	Cases of Excision of the Elbow-Joint	*do.*	114
51	On the Different Forms of Inflammation in Joints	*Dr. F. Fuhrer*	117
	ORGANS OF CIRCULATION.		
52	On the Treatment of Aneurism	*R. C. Williams, Esq.*	119
53	Case of Aneurism by Compression	*Edward Cock, Esq.*	121
54	Poplitical Aneurism Cured by Compression of the Femoral Artery at its Upper Third	*Dr. J. Munro*	122
55	On the Obliteration of Varicose Veins, and the Sources of Danger involved in that Operation	*Henry Lee, Esq.*	124
56	New Method of applying the Ligature in the Treatment of Nævus	*J. Startin, Esq.*	131
57	Tincture of Mastic as a Hæmostatic	*Dr. Frankl*	132
	ORGANS OF RESPIRATION.		
58	On Tracheotomy, with a New Method of Performing the Operation	*Henry Thompson, Esq.*	132
59	Paracentesis Thoracis	*—— Hutchinson, Esq.*	137
	ALIMENTARY CANAL.		
60	Case of Hare-lip	*George Yates, Esq.*	137
61	Contributions to the Surgery of Rupture	*John Gay, Esq.*	139
62	On the Operation for Crural Hernia	*Prof. Fergusson*	141
63	Case of Strangulated Hernia	*do.*	141
64	Mechanical Support in Prolapsus Ani	*James Deane, Esq.*	142
65	Fistula in Ano	*M. Alquie*	143
66	Cases of Hemorrhoids Treated by Nitric Acid	*Dr. William Cooke*	143
	ORGANS OF URINE AND GENERATION.		
67	Cases of Stricture	*John Hilton, Esq.*	146
68	On the Solution of Urinary Calculi in Dilute Saline Solutions, at the Temperature of the Body, by the aid of Electricity	*Dr. H. Bence Jones*	149

ARTICLE		AUTHOR	PAGE
69	On the Causes of Death from Lithotomy	*Wm. Coulson, Esq.*	150
70	Mr. Hutchinson's Air-Compressor of the Testicle		153
71	Varicocele Treated by the Needles and Twisted Sutures	*Messrs. Coulson, Fergusson, and Partridge*	154
	DISEASES OF THE SKIN.		
72	On a New Caustic in Malignant Ulcerations of the Face	*M. E. Cazenave*	156
73	Collodion and Castor-Oil in Erysipelas	*M. Guersant*	156
74	On the External Application of the Tincture of Iodine in Erysipelas	*Hugh Norris, Esq.*	157
75	On the Treatment of Erysipelas by Iron	*Dr. G. W. Balfour*	157
76	Treatment of Ulcers of the Leg		158
77	Obstinate Ulcer of the Leg—New Mode of Inducing Cicatrization	*John Gay, Esq.*	160
78	Unexpected Effects of the Employment of Carbonate of Magnesia in the Case of Warts	*Dr. Lambert*	161
79	Treatment of Acne and Boils	*J. Startin, Esq.*	161
80	Balms for Diseases of the Skin	*M. Cazenave*	161
	SYPHILITIC DISEASES.		
81	Cases of Syphilis	*John Grant, Esq.*	162
82	On the Employment of Tannin in Gonorrhœa	*Dr. Lange*	162
83	On the Treatment of Bubos	*M. Bonnafont*	163
	DISEASES OF THE EYE AND EAR.		
84	On the Use of Chloroform in Operations on the Eye	*White Cooper, Esq.*	163
85	Treatment of Strumous Ophthalmia	*Thos. Wormald, Esq.*	164
86	New Kind of Curette	*Haynes Walton, Esq.*	164
87	On a Cause of Deafness not Hitherto Described	*Prof. Syme*	164
88	Artificial Tympanic Membranes	*Joseph Toynbee, Esq.*	165
89	On the Muscles which open the Eustachian Tube	*do.*	166
90	On a Simple Method of ascertaining, without the Use of the Catheter, whether the Eustachian Tubes are Pervious	*do.*	167

MIDWIFERY,

AND THE DISEASES OF WOMEN.

91	On the Induction of Premature Labour, by the Method of Professor Kiwisch, of Wurzburg,	*Dr. W. Tyler Smith*	169
92	Induction of Premature Labour by Means of the Douche	*Dr. Shekleton*	172
93	A Case of Pelvic Distortion, in which Premature Labour was Induced by the Water Douche	*J. Prior Lacy, Esq.*	174
94	Observations on the Induction of Premature Labour before the Seventh Month of Pregnancy	*Dr. Robert Lee*	176
95	On the Relations between Menstruation, Conception, and Lactation, and the Influence of Lactation in causing Abortion	*Dr. Robert Barnes*	177
96	Use of Tartar Emetic in Tedious Labours	*J. Stedman, Esq.*	177
97	Rupture of the Uterus: Absence of Symptoms	*Dex Bean, Esq.*	179
98	Cases of Hemorrhage after Delivery accompanied by Severe After-pains	*Dr. F. H. Ramsbotham*	180
99	Peculiar Case of Accidental Uterine Hemorrhage	*I. Harrinson, Esq.*	183
100	Case of Internal Uterine Hemorrhage	*George King, Esq.*	185
101	Case of Uterine Hemorrhage	*W. E. Crowfoot, Esq.*	186
102	Cases Illustrating the Treatment of Uterine Hemorrhage	*Dr. J. M. Winn*	187
103	On the Source of Hemorrhage in Partial Separation of the Placenta	*Dr. F. W. Mackenzie*	188

ARTICLE.		AUTHOR.	PAGE.
104	On Prolapsus of the Uterus and Vagina during Pregnancy and Labour	*J. H. Houghton, Esq.*	190
105	On Prolapsus of the Anterior Wall of the Vagina as an Occasional Cause of Fetid, Phosphatic, Mucous Urine	*Dr. Golding Bird*	193
106	On Inflammatory and Non-inflammatory Ruptures of Ovarian Dropsical Cysts	*Prof. Simpson*	195
107	Position of the Patient in Tapping Ovarian Cysts	*Dr. T. H. Tanner*	195
108	On Rupture of the Perineum	*I. Baker Brown, Esq.*	196
109	On Dysmenorrhœa	*Dr. Jas. Henry Bennet*	199
110	Chronic Bronchitis complicated with Dysmenorrhœa	*do.*	199
111	Cases of Complicated Polypus Uteri, with Remarks	*Dr. F. H. Ramsbotham*	201
112	On the Ligature in Polypus Uteri	*do.*	202
113	On the Uterine Mucous Membrane	. . . . .	202
114	Apparatus for Premature Infants	*Dr. Channing*	203
115	Treatment of Chronic Abscess of the Breast and Milk Fistulæ—Employment of Iodine Injections	*John Birkett, Esq.*	203
116	Performance of Tracheotomy in a Case of Uterine Epilepsy	*Dr. Tyler Smith*	205
117	New Galvanic Battery	—— *Stringfellow, Esq.*	206
118	On Fibro-Plastic Tumours	*M. Lebert*	206
119	On the Composition of Human Milk in Health and Disease	*MM. Vernois & Becquerel*	208
120	On the Pathology and Treatment of Leucorrhœa, Based upon the Microscopical Anatomy of the Os and Cervix Uteri	*Dr. Tyler Smith*	209
121	On Puerperal Convulsions	*Caleb Rose, Esq.*	212
122	Puerperal Convulsions from Cerebral Congestion, Treated by Bleeding and Tartarized Antimony	*J. B. Mawer, Esq.*	212
123	Bony Tumour of the Uterus	*Dr. Crisp*	214
124	On the Impregnation of the Ovum in the Amphibia	*George Newport, Esq.*	214
125	Paralysis of Bladder from Over-distension after Delivery, Simulating Peritonitis	*Dr. J. C. W. Lever*	217
126	On the Diagnosis of Chronic Ovarian Tumours	*Dr. E. J. Tilt*	218
127	On the Diagnosis, Treatment, and Pathology of Ovarian Tumours	*Dr. Frederick Bird*	221

ADDENDA.

128	On the Chemical Substrata of the Human Body	*Dr. G. E. Day*	225
129	On Scrofula	*Dr. M. A. E. Wilkinson*	226
130	On the Treatment of Neuralgia	*Dr. Edwin Morris*	229
131	On the Effects of Lead upon the System	*Dr. James Alderson*	229
132	Case of Lead Poisoning	*Dr. Edward Murphy*	235
133	On the Employment of Iodide of Potassium as a Remedy for the Affections Caused by Lead and Mercury	*M. Melsens*	239
134	On Concussion of the Brain	*Dr. R. C. Williams*	243
135	On Elective Elimination by the Salivary and other Secretions	*M. Cl. Bernard*	245
136	On the Administration of Phosphorus	*Dr. R. M. Glover*	246
137	Hyposulphite of Soda and Silver	*M. Delioux*	246
138	On Medical Meteorology	*Dr. T. Moffat*	247
139	Recent Uses of the Ammonio-sulphate of Copper	*Dr. Hamilton Roe*	248
140	Poisoning by Laudanum in an Infant; Effects of Galvanism	*George Kirk, Esq.*	248
141	Therapeutic Uses of the Bark, Leaves, Seeds, and Root of the Common Ash	*Dr. Otterbourg*	249
142	Guaco, an Antidote to Serpent Bites; its Use in Rheumatism, Sciatica, Deafness, &c.	*Dr. E. W. Pritchard*	250
143	Antidotes to Serpent Bites	. . . . .	251
144	Excision of the Knee-joint—Fatal Termination of the Case	*Prof. Fergusson*	252
145	On the Use of a Vertebral Hook in some Cases of Difficult Delivery	*Dr. Henry Oldham*	253

ARTICLE.		AUTHOR.	PAGE.
146	Fomentations of Digitalis in Certain Kinds of Ascites	*Dr. Raymond Falot*	255
147	Large Hæmatocele of the Thyroid Gland, causing Urgent Dyspnœa by Pressure upon the Windpipe—Treatment by Free Incision—Cure	*E. R. Bickersteth, Esq.*	256
148	Improved Method of Continuous Irritation	*John Hilton, Esq.*	257
149	On the Mode of Formation of Secondary Abscesses, and some other consequences of a Vitiated, Condition of the Blood	*Henry Lee, Esq.*	258
150	On Organic Chemistry	*Dr. A. W. Hofman*	263
151	On the Arrest of Continued Fever by Cinchonism	*J. Ogden Fletcher, Esq.*	264
152	Fibro-Albuminous Diathesis	*Dr. Ogle*	265
153	Case of Rheumatic Pericarditis and Pneumonia	*Dr. R. B. Todd*	267
154	On Tumours	*James Paget, Esq.*	272
155	Cases of Epithelial Cancer	*Messrs. Erichsen, Paget, & Stanley*	307
156	On the Medical Treatment of Insanity	*Dr. Forbes Winslow*	313
157	Cases of Abscess of the Abdominal Parietes	*Dr. J. C. W. Lever*	323
158	New Mode of Administering Iodine	*M. Hannon*	326
159	Camphor an Antidote for the Poison of Strychnine	*Dr. I. Pidduck*	326
160	Experiments in Animal Electricity	*Dr. du Bois Reymond*	326
161	On the Morbid Action of Softened Fibrine, &c.	*Henry Lee, Esq.*	327
162	Indian Hemp as an Oxytocic	*Dr. John Grigor*	333
163	On the Theories of Animal Heat	*Sir B. Brodie, Bart.*	334
164	On the Uses of Manganese as an Adjuvant to Iron	*M. Petroquin*	337
165	Therapeutic Action of Furfurine, Nickel, &c.	*Prof. Simpson*	340
166	On Iodine	*Dr. Merei*	341
167	Chloroform in Scotland	*Prof. Simpson*	342
168	On a New Kind of Alcohol		343
169	On Pagliari's Hæmostatic		343
170	On the Secondary Degeneration of Particular Fasciculi of the Spinal Cord, and of their Continuation to the Brain	*Dr. Ludwig Turck*	343

SYNOPSIS.—INDEX.

PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON EPIDEMIC DISEASES.

By DR. W. B. CARPENTER.

[ONE of the most interesting papers we have lately read is by Dr. Carpenter, in the 'British and Foreign Med. Chir. Review' on the abovenamed subject—for though professing to be a review of the work of Dr. Marchal 'On Epidemics,' Dr. Carpenter, in the interesting subject before him, almost forgets his author, and gives us the most recent information on the subject gathered from his own and the experience of others. He begins his paper by considering the predisposing causes of epidemics, which are as necessary to their existence as the exciting causes, or the poisons themselves. Cholera poison would not affect a person whose system was perfectly healthy. There must be a susceptibility to its influence. What is this susceptibility? What are these predisposing causes? The answer of Dr. Carpenter is most interesting, and, to us, most satisfactory. He says,]

Experience has shown that what is true of cholera, is true also of a large number of other diseases of the same class; the causes which engender a special liability to one, being equally efficacious in producing a similar liability to another: so that we have a strong presumption that the *cause* of the invasion of epidemic disease in each individual case, may be expressed by this simple formula,—a certain general condition of the human body, *plus* the specific poison of the particular disease. When these two antecedents are concurrently present, the disease is invariably produced; when either of them is wanting, the disease cannot be developed. And we may thus prevent its invasion no less effectually by preventing the occurrence of the predisposition, than by preventing the development of the poison itself. Now as the conditions of the former are for the most part both certainly known and readily within our reach, our first attention ought surely to be given to them; the other question, however, being not disregarded, although less capable of an immediate solution. Towards this solution, however, we shall have made an important step, if we can clearly determine that condition of the system which is essential to the operation of the morbid poisons; since we thereby gain a clue to the nature of that operation, which may be of great importance in leading us to a precise knowledge of it.

Now we believe that we shall be able to show, that all the recognised predisposing causes of epidemic disease, tend to produce, in the blood of the individuals exposed to them, an excess of those decomposing organic compounds, which, as physiology teaches us, are always present in the circulating current, in minute proportion; being conveyed by it, from the spots in which they are introduced, or in which they are generated, to the organs through which they are to be eliminated. Such an excess is manifestly producible, either by the direct introduction of these matters from without, in the food or drink consumed, or in the air respired; or by the production of them within the body, at a rate beyond that at which they are normally eliminated; or by some obstacle to their elimination, which prevents the amount ordinarily generated from escaping at its normal rate through the usual outlets. And as we shall find that to these three categories all such causes may be referred, we have very strong ground for the belief, that the condition of

the blood to which we have alluded, is that which, in concurrence with the specific poison, affords the invariable antecedent of which we are in search.

[All epidemic diseases generally classed under the term 'Zymotic' belong to one family in this respect—that they act upon the blood like ferments. A *ferment* is an azotized substance undergoing putrefaction, and capable of exciting analogous changes in certain substances brought into contact with it. These substances may be azotized or non-azotized—if the former the ferment reproduces and multiplies itself at the expense of the azotized material—if the latter they simply occasion that re-arrangement of their components of which fermentation consists, *without reproduction* of the fermenting material. This fact has been applied to explain the reason why certain diseases, as hooping-cough, occur only once in a life-time; some special fermentible element being considered necessary to exist in the blood before the zymotic ferment can take effect. The existence of a second or third attack depends upon the fermentible matter being reproduced in the blood.]

Our general proposition when stated (so to speak) in the terms of the zymotic theory, amounts to this:—that all the recognised predisposing causes of zymotic disease tend to produce in the blood an undue accumulation of azotized matter, already in a state of *retrograde metamorphosis*, and therefore precisely in the condition in which it is most readily acted on by ferments; that the presence of such matter is absolutely requisite, in the great majority of cases, for the morbific action of the zymotic poison, which has no direct action upon healthy blood, all whose components are in a state of progressive metamorphosis; and that the liability of each individual, among a number who may be concurrently exposed to the same poison, will mainly depend upon the degree in which his blood may be charged with the matters in question.

The first indication which we shall adduce, of the actual existence of this hypothetical entity, is that which first suggested the doctrine to our own minds; namely, that peculiar liability of the *puerperal* female to become the subject of zymotic disease, which affords the plainest evidence (if the zymotic theory have any truth whatever) of her peculiar susceptibility not merely for the reception, but for the further development, of poisons of the zymotic kind.

[This point is sufficiently well established from the circumstance of the undoubted conveyance of puerperal fever from one patient to another by the person of the medical attendant. Further—erysipelas, typhus, and scarlatina poisons coming in contact with puerperal patients, frequently produce pure puerperal fever poison. Even putrescent effluvia surrounding lying-in-hospitals, or being blown towards them by the wind, have produced an epidemic of this fatal disease. It is supposed that the special potency of the poison in the puerperal female is because the tissue of the womb is in rapid disintegration; fatty degeneration is going on in its muscular structure, as proved by the fat globules in the lochial discharge, and in the urine of the patient.]

We look upon this degeneration as only a peculiar case of that which is constantly taking place in muscular tissue as a consequence of its functional activity; for although we may not yet be in a condition to specify the precise nature of the chemical changes which occur in it, there is adequate evidence that these changes involve the ultimate production of two classes of *complementary* compounds; on the one hand, a *non-azotized* series, including sugar, fat, and lactic acid, which are destined to be eliminated by the respiratory process; and on the other, a *highly-azotized* series, of which creatine and urea are among those that are first traceable, and to which the kidney affords the appropriate channel of exit. After the mighty effort which the uterus has made in the expulsion of its contents, rapid disintegration of its substance occurs, and there can be no doubt that, as the *complement* of the fatty compounds which are generated more abundantly than they can be carried off by the respiratory process, there must also be produced an equivalent amount of highly-azotized compounds, such as, until they have assumed the comparatively permanent forms of urea and creatine, must be, like the azotized matter of sweet-wort, peculiarly susceptible of having their constitution entirely altered by the action of a ferment.

[The remarks made above apply equally well to the contagious form of fever, recently noticed by Dr. Simpson, which has been termed surgical fever; indeed, the puerperal poison seems able to produce the surgical, and *vice versâ*. But the

cause of some of these zymotic diseases may be strictly without, and not within, the body; thus, the ingestion of putrescent food or water, the inhalation of air full of miasmatic emanations, are among the most powerful predisposing causes. Dr. Carpenter mentions an instance of this. All the persons who had partaken of a quantity of oysters in a state of decomposition were taken ill with choleraic symptoms, and eleven of them died. That the ingestion of decomposing matters in the water used as drink will produce a liability to these forms of disease is proved from the following extract from the Cholera Report of the Board of Health:]

"In Manchester a sudden and violent outbreak of cholera took place in Hope-street, Salford. The inhabitants used water from a particular pump-well. This well had been repaired, and a sewer which passes within nine inches of the edge of it became accidentally stopped up, and leaked into the well. The inhabitants of 30 houses used the water from this well; among them there occurred 19 cases of diarrhœa, 26 cases of cholera, and 25 deaths. The inhabitants of 60 houses in the same immediate neighbourhood, used other water; among these there occurred 11 cases of diarrhœa, but not a single case of cholera, nor one death."

In this instance, it seems impossible to avoid the conclusion, that the impregnation of the system with the putrescent matter thus insidiously introduced, determined not merely the selection of individuals by the cholera poison, but the terrible fatality of the disease in those attacked by it, *only one out of twenty-six having escaped*. We could cite, from the same Report and its Appendices, many other cogent examples of the same kind, several of them extending the evidence to zymotic diseases of different forms; but such of our readers as may not be satisfied upon this point can easily refer to these sources of information; and we shall confine ourselves to the mention of a case which occurred within our own knowledge. In a certain terrace, in the most aristocratic suburb of a large provincial town, consisting of houses of a superior class, and very favourably situated as regards free access of pure air, an epidemic of gastric fever broke out, a few years ago, much to the astonishment and dismay of the residents, no such malady having been known to prevail in the neighbourhood within the memory of "the oldest inhabitant." It was soon observed, however, that this epidemic was limited to particular houses; and, further, that whilst in some houses whole families were more or less affected by it, in others only the servants were attacked. Now, the water-supply of this terrace was in part derived from a neighbouring well, and in part from a deep spring at a distance; the latter, however, being paid for, was by no means universally employed, although much preferred as a purer water; and thus, whilst some of the houses only used the spring water, others only used the well water, and in others, again, the spring water was employed in the parlour, the well water by the servants in the kitchen. For some little time before this outbreak of fever, a disagreeable taste had been observed in the well water, and this was subsequently traced to the bursting of a sewer, which had discharged part of its contents into the well. The houses *first* attacked by the fever, were those in which only the well water was employed; and it was where the use of well water was limited to the servants of the family, that they alone were at first affected by it. There appeared reason to think that some of those who had not used the well water became the subjects of the malady by subsequent communication with those first affected; but there seems no reasonable doubt that the contamination of the water was the cause which originally determined the development of the zymotic poison in this locality, which has never again suffered from any such invasion, the faulty sewer having, of course, been repaired.

[*Miasmatic effluvia*, introduced into the system by pulmonary absorption, will produce the same result; for out of 120 persons inhabiting 17 roomy comfortable dwellings, 42 were attacked with cholera, and 30 died from no other apparent cause than abominably bad sewerage, and possibly contaminated water. *Famine*, again, is one of the most powerful predisposing causes of pestilence; for]

It is one of the most curious phenomena of starvation, yet one of which it is not easy to give a satisfactory explanation, that a state of general putrescence supervenes even during life; as if the want of material for the generation of new tissue were an obstacle to the deportation of that which has become effete.

An accumulation of disintegrating matter in the system may be due, not merely to its excessive production, but to any obstacle which interferes with its due elimi-

nation; and this will be especially the case, when the respiratory process is imperfectly performed. All physiological and pathological evidence tends to indicate the paramount importance of this process; not merely as regards the direct elimination, through the lungs, of a large amount of matter which is undergoing change; but also as furnishing the conditions, by which the matters properly to be excreted by the kidneys, are brought into the normal condition for being thus eliminated. For any prolonged deficiency of respiration necessarily lowers the general oxidating process throughout the body; and thus it happens that an undue amount of carbonaceous matter is thrown upon the kidneys for excretion, and that the highly-azotized compounds are not so completely brought, as they should be, into the condition of urea. Now, that *overcrowding*, and consequently deficient aëration of the blood, is one of the most frequent causes of the severity of epidemics, is a fact so universally recognised by all who have attended to the subject, that we need scarcely do more than advert to it.

The evil results of an insufficient supply of air are not exerted merely through the imperfect oxidation and elimination of the substances which are undergoing decomposition within the system; for the same cause will operate to confine the putrescent effluvia that are given off *as such* from the lungs and skin, which will produce the same effect upon the individuals habitually exposed to them, as if these were generated from some external source. It was ascertained by the experiments of Collard de Martigny, that the fluid exhaled from the lungs is by no means pure water, but contains as much as three parts in 1000 of organic matter. If this fluid be kept in a closed vessel, and be exposed to an elevated temperature, a very evident putrid odour is exhaled from it; and from the recent experiments of Mr. R. A. Smith, it appears that its putrescence depends on the decomposition of an albuminoid substance. There is every reason to believe that the fluid exhaled from the skin is charged with a very similar substance; its presence being indicated by the foul odour of garments that have been too long worn. And thus imperfect ventilation becomes the means, not only of preventing the due elimination of decomposing matter from the body, but actually of re-introducing its poisonous products into the blood, by the very process which was designed for the purification of the vital fluid. It seems, moreover, quite legitimate to conclude, that when the normal oxidation of the decomposing matter is prevented, the amount of that matter excreted in a state of imperfect oxidation will be increased; just as a lamp or fire smokes, when there is not enough air to support a perfect combustion.

Among the predisposing causes which promote the spread of epidemics, *intemperance* is admitted to hold a high rank. Its efficacy has been generally attributed to the general disorder of the nutrient process, and to the weakening of the vital powers, which it tends to induce; but to us it appears that it possesses a more direct and special action. One of the best-established among the consequences of the introduction of alcohol into the blood, is its rapid oxidation, whereby it is itself eliminated from the circulating current; but, in thus greedily appropriating to itself the oxygen which the respiratory process supplies, it *prevents* the oxidation of other substances, of which it is one of the special objects of that process to get rid; thus tending to induce the same condition of the blood as that which is consequent upon obstructed respiration. And the peculiar potency of this cause in hot climates, where the oxidating process, as measured by the production of carbonic acid, does not take place at above half the rate at which it is carried on in a colder atmosphere, is a strong confirmation of this view.

[*Fatigue* from excessive muscular exertion must be ranked with the other causes.]

All muscular exertion, it is now universally admitted, involves as its condition a disintegration of muscular tissue, the components of which normally undergo oxidation, so as to be partly eliminated by the respiratory process under the form of carbonic acid and water, and partly by the kidney under that of urea, &c. Now, if the disintegration of muscle by exercise takes place faster than the matter thus set free to decompose can be oxidated and eliminated, it must remain in the blood for a time, in that very state of readiness to change which renders it peculiarly fermentible; and thus its presence in the circulating current will give to the blood the same susceptibility to the action of zymotic poisons, which it will derive from any of the causes already mentioned. And that this is the true *rationale*, seems

to us to be strongly indicated by the fact which lies within the experience of every one, that muscular exertion so much more speedily induces fatigue in a warm atmosphere than in a cold one; and also by the fact, which is a matter of common notoriety in India, that troops on a march are peculiarly liable to suffer from fever, cholera, dysentery, or other zymotic diseases. For in proportion as the oxidating process is reduced in activity by a high external temperature, in that proportion must the products of the muscular disintegration tend to accumulate, inducing the feeling of fatigue by the deterioration of the blood to which their presence gives rise; and in like manner occasioning an extraordinary fermentibility in the circulating fluid, which renders it peculiarly ready to undergo a morbid change when any zymotic poison is introduced into it. Now, if this view be correct, we should expect to find the predisposing power of muscular exertion peculiarly augmented, either by any obstacle to free respiration, or by the ingestion of alcoholic liquors which will diminish the efficacy of that respiration. And such is undoubtedly the case.

[This is remarkably proved from instances of regiments, when performing forced marches, being singularly liable to zymotic diseases. In these cases, there is great waste of muscular tissue; and frequently the due elimination of decomposing products is prevented by alcoholic excesses.]—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 150.

2.—ON THE INFLUENCE OF HUMAN EFFLUVIA.

By R. D. Grainger, Esq.:

[In a paper read before the Epidemiological Society, in introducing his subject, Mr. Grainger makes the following very startling proposition:—That the same deleterious agents operate as predisposing causes in regard to the whole class of zymotic diseases; that the same agents which will develope the exciting cause of fever will develope also scarlatina, small-pox, diarrhœa, or cholera. He then proceeds to say,]

"According to my observation, the most injurious of all the causes operating on the diffusion of epidemic diseases, are the effluvia proceeding from the human body, particularly from the lungs and skin. The special deleterious agent consists of the effete, and as it has been proved experimentally, highly putrescent organic matter, mingled with the expired air. That it is, when re-introduced into the living body, highly injurious, might be inferred from the very fact of the careful provision made by nature for its incessant elimination from the system. That it is small in amount is no objection to the intensity of its action; for, to the physiologist, it is well known that a minute quantity of a powerful agent—the putrid matter introduced on the point of a needle in the inspection of a dead body, a single drop of concentrated prussic acid placed in the mouth of an animal, is sufficient to destroy life. It is in overcrowded bedrooms, in unventilated schools, workhouses, dormitories, &c., that this effete matter taints the air, and entering the blood, poisons the system. Although there is a great diminution in the amount of carbonic acid in the air evolved by the lungs, still the evil, quoad the development of fever, scarlatina, cholera, and so forth, depends on the organic, not the chemical, products of respiration." The learned author referred to some experiments proving the truth of this assertion. He then continued:—"It is, however, familiar to all practitioners, that human effluvia specially exhibit their poisonous influence when either multitudes of human beings are crowded together, or where a smaller number are placed in confined and unventilated sleeping places. Many instances of the influence thus excited on all kinds of epidemic disease have come under my notice, but only a few illustrative examples can here be adduced. The following case illustrates the effect of overcrowding in respect to cholera. During the epidemic of 1849, the inmates of a reformatory establishment for young women suffered intensely from the pestilence, 40 out of a total of 96 being attacked, and 15, or rather more than 15 per cent. falling victims to the disease. Now, these poor sufferers were previously in perfect health; they were well fed, well clothed, and carefully tended; but the

dormitories were low and much crowded; the windows, for the sake of seclusion, were partly closed up, thus greatly interfering with the ventilation. After a careful investigation, I could detect no other cause than this for the sudden outbreak occurring at a period when there was little cholera in the neighbourhood. As regards the influence of overcrowding in the development of low fever, I may appeal to the experience of every medical practitioner whose duties call him much among the poor. It matters not whether we speak of the closely-packed common lodging-house, of rows of houses built back to back, of the small, unventilated, and often single sleeping apartment of the mechanic, or of the ill-built cottages in rural districts, with their one bedroom, overhanging thatch, and small lattice; wherever, either from the presence of numbers, or the absence of ventilation, you have the fetid sickening air generated by human effluvia, there assuredly you will find fever. Although observed especially among the poor, fever, as it occurs in this country, is not especially dependent on poverty and destitution. Want may, indeed, aggravate the evil, and actual famine, as we unhappily saw a few years ago in Ireland, may give immense development to typhus; but that persons well fed, living in comfort, and strong in health, may suffer severely from low fever, is shown by a large experience. One of the best examples, perhaps, is furnished by the sailors belonging to the collier vessels frequenting the Thames. These men as a body are in the prime of life, robust, and well fed; but as I found by examining many of these vessels, the place where they sleep—the forecastle—is excessively small and confined, and with this serious additional evil, that as the hatchway is usually flush with the deck, whenever there is much sea, it becomes necessary to close the hatchway, where the unfortunate sailors must be without any window, as if shut up in a close box. When, too, the vessels come to London, as only one man is required to keep watch at night, all the sailors are crowded at the same time into their closely-packed berths. Some years ago the attention of Mr. Busk, the distinguished surgeon of the Seamen's Hospital Ship, was attracted to the large number of typhus cases which were admitted. In 1841 they amounted to 147; in 1842 to 167. It appeared that of all the vessels in the Thames the colliers furnished the most fever cases. In investigating this question I could detect no other cause than the polluted air these men must have breathed in the confined forecastle. That there is nothing connected with a sailor's mode of life to expose him to typhus is proved by the experience of well-managed vessels, and as one among the many proofs which might be adduced, I may mention that Mr. Clark, who has made ten voyages to India as surgeon in Messrs. Green's fine vessels, had never had a single case of typhus. The author, after referring to the very great improvement in the health of those of the working classes who inhabit the model lodging-houses erected in different parts of the town by the Society for the Improvement of the Dwellings of the Labouring Poor, and to the highly satisfactory working of the admirable Act carried by the exertions of the Earl of Shaftesbury for controlling common lodging-houses, said that his own experience of the deplorable conditions of these abodes corroborated the statements of Capt. Hay. All tended to show that such pestilential places were the habitats of disease, and the cause of enormous expense to the rate payers.

"The effluvia from cesspools, when concentrated, afford a marked illustration of the principle already noticed, that any one of the predisposing causes of epidemic disease is capable, according to circumstances, of developing all the principal members of the class. But the extended inquiries of late years have shown, that affections of the abdominal organs are specially liable to be thus induced; gastric fever of a low character, and often of the remittent type, vomiting, diarrhœa, dysentery, and cholera, are the constant results of what may be termed the privy atmosphere. In the city of Norwich it is a common custom, even in the most respectable houses, to have large cesspools in the cellar or basement, frequently of enormous size, some of them being 60, 80, or 100 feet deep. The effluvia were often most overpowering, and in every instance in which inquiry was made, I found that the inmates, and especially the children, who always suffer more than adults, had laboured under vomiting, diarrhœa, low remitting fever, &c., which were attributed by the medical attendants to the malaria thus arising." Several instances were adduced, which showed in a striking manner the depressing effects on the system of exposure to an atmosphere impregnated with the effluvia arising from cesspools,—instances in

which the mere removal of the contents of the cesspools sufficed to restore to a good state of health those who had previously suffered from exposure. Mr. Grainger then gave the history of the late attack at Southend which occurred in November and December last, and where, from the large quantity of rain that had fallen, and from the town being entirely unprovided with drainage, the lower parts of the houses, both of the upper and lower classes, had been flooded till the soil from the privies and water-closets had become mixed with the water invading the kitchens and basement floor. The water, indeed, had risen as high as the seat of the privy. Many of the first families were attacked, and several deaths occurred in some of the principal terraces, where the rents and taxes of unfurnished houses were often as high as £60, £80, or £100 a-year. "These instances plainly show, that wherever human beings, whether poor or rich, are exposed to the privy atmosphere for a sufficient time and in sufficient intensity, their health inevitably suffers, from a degree which is only called 'ailing,' to nausea, dyspepsia, and diarrhœa, or to low fever, usually of the gastric type, often remittent; to obstinate and fatal diarrhœa and dysentery; or, when present, to cholera."—*Med. Times and Gazette, Feb.* 26, 1853, *p.* 227.

3.—ON THE TREATMENT OF FEVER BY LARGE DOSES OF SULPHATE OF QUINA.

By Dr. Wentz Barclay, Medical Registrar of St. George's Hospital.

[The question in treating these cases by sulphate of quina is not so much whether tonics are not required, as it is whether, by giving large doses of the salt, we can cut short the disease, and prevent it running its ordinary course. There is no doubt that cases do occur in which it is perfectly powerless to prevent a fatal termination; still it is somewhat strange to learn that a patient may take two or three drachms of sulphate of quina in twenty-four hours, at the very height of a severe attack of fever, and yet suffer no harm from it.]

In watching these cases, one fact has been most striking and unmistakeable, and that is, the effect of the remedy when pushed to its full extent: the pulse is depressed, the vital powers are prostrated, and vomiting follows. In some of the more severe cases there was such a tendency to sinking that stimulants were had recourse to, and seemed urgently called for. But this condition was by no means followed by a remission of the disease, which recurred as soon as the physiological effects had passed off.

One or two cases got well very speedily under its employment, in which general prostration was not produced, and its special effect, if any, was limited to lowering the general circulation. But it must be remarked, that, as we have no specific indications by which to measure the intensity of individual cases, so it is quite impossible to tell whether rapid convalescence in one or two instances was due to the treatment employed or to the milder character of the disease. And, though it is unquestionable that depression of the pulse is one of the physiological effects of this remedy, yet it must be remembered that the fever of the last six months has not been marked by any great frequency of pulse, and that in one or two instances the same remarkable slowness of pulse has been noted in rapid convalescence, under ordinary treatment. Consequently, when general prostration has not followed its administration, it may be doubted whether it was the cause either of the rapid convalescence, or of the character of the pulse.

Such considerations only render it the more necessary to take a comprehensive view of a large number of cases. The present series is, perhaps, not so great as might be wished, and certainly is not sufficient of itself to form the basis of a correct judgment of *all* the virtues of the remedy; but we cannot provide an epidemic at will for our experiments, and a knowledge of what it has already done, or failed to do, will best prepare for its judicious employment in future epidemics.

From among the cases of fever viewed with relation to their termination in recovery or death under different modes of treatment, it is needful to exclude such as were complicated with other diseases, as well as such as merely simulated typhoid fever, whether the resemblance was so great that, in the absence of any cor-

rest history of the case, its nature was left in doubt till after death, or whether it was merely regarded as fever, and treated as such until other symptoms arose to correct the diagnosis. Two cases of this nature, however, may be contrasted, in which the appearance of fever was exactly simulated by the low form of cerebral inflammation accompanying the tubercular diathesis. They each presented a quick pulse, hot dry skin, coated and dry tongue, relaxed bowels, with dark thin stools, and a muttering, unconnected delirium, without heat of head, or complaint of pain. The tubercles in the lungs were not much developed, and so equally diffused that no special indications could be derived therefrom. The cerebral symptoms were more marked than usual in fever, and in the one, for some days before death, were unmistakeable.

In one of these cases, quinine was given, in the other not; and while no surprise can be felt that it did not stay the inflammatory action, it is at least worthy of note, that no increase of the disorder seemed to attend its employment, that there was no hastening of the fatal result, no aggravation of symptoms.

The physiological effects of the quina were developed in this instance, and exactly corresponded to those noticed in the fever patients; the depression was perhaps not so fully marked; and there seemed to be considerable calming of the delirium. This may have been, however, only the transition from the delirious to the somnolent and semi-comatose stage of the disease. The duration and the intensity of those two cases, under such opposite modes of treatment, were very nearly similar.

It will be convenient also to allude to the only two uncomplicated fatal cases of fever which have occurred in St. George's Hospital during the six months under consideration. In one, the quinine treatment was employed; in the other, the ordinary method by salines, &c. Both were from the first severe. They were respectively eleven and twelve days under treatment, the whole duration in one being twelve days, and in the other seventeen days. That in which the saline treatment was employed died in a state of collapse, from the supervention of peritonitis, as was believed, after ulceration of the bowels and hemorrhage, but no *post mortem* examination was allowed. The one in which quinine was given, on the other hand, was one which bore all the marks of genuine typhus, as it is called, with the exception of the mottled rash, which was never seen, and it was quite a matter of doubt whether any decided fever spots existed, one or two very faint and fleeting marks on the abdomen being all that were observed. The tongue was brown, dry, and coated; there was very little diarrhœa and constant delirium, passing into stupor and coma; the face was much congested, and the eyes suffused. He died evidently from blood-poisoning, and the blood after death was very fluid, while only a few small ulcerations were found in the small intestine.

In this case the pulse was lowered for several days from 120 to under 100, but there was sickness and great depression attendant on the quinine treatment, which was twice employed, and had to be given up on each occasion in consequence of this effect. No benefit was derived from its use.

One of the cases which recovered presented the same train of symptoms, and, so far as could be ascertained in the absence of actual inspection, the bowels were not ulcerated; there was no diarrhœa, and the stools produced by castor-oil were generally of a pretty natural appearance; the tongue never became shining, glazed, or chapped: in this instance, too, there were no spots.

Cases of this nature have been rare during the last six months, the fever has been generally of a milder type, and, when serious complications have been noticed, they have generally been connected with evidence more or less distinct of ulceration of the bowels.

The cases treated by quinine may be divided into three classes:—1. Those in which its exhibition was followed by marked depression. 2. Those in which the pulse became slower, without general prostration or sickness. 3. Those in which no decided effect was produced which could be noted at the time.

1. Including all the cases together in which this effect was produced, the number is five. Two have been already mentioned as fatal, one of apparent typhus, one of tubercular inflammation of the brain, to which a third may be added, complicated with albuminuria, which was not detected until the subsidence of the

fever, and ultimately proving fatal. The physiological effect of the remedy was produced by very different quantities in different instances, and given at very varying intervals. One patient took twenty grains every three hours for nine times; another took ten grains every two hours for ten times; while a third took twenty grains every six hours for only three times; the other two had twenty grains every four and every six hours respectively for eight times.

Of the three uncomplicated cases, one died, one was ill ten days before admission, and remained under treatment forty-five days before recovery was complete; the other had been ill a week, and was discharged cured at the end of twenty-four days.

2. In two instances only did the pulse become remarkably slower without any depression; one took ten grains every three hours, the other fifteen grains every four hours for about two days, after which the dose was gradually diminished. The first had been ill five days, and was discharged cured in eleven days, having been kept under observation longer than was perhaps absolutely needed to ascertain that recovery was really complete; the second had been ill only two days, and got well in three weeks.

The first case was not severe, and had no spots; the second was delirious for the first two or three nights, and had a faint rather indistinct rash on the abdomen; he had also pretty severe diarrhœa, but no evidence of ulceration of the bowels. The pulse fell in each below 50, but it is necessary to state here, that in another instance it fell still lower in which no quinine was given. He made a very rapid recovery, being ill only five days before admission, and leaving the hospital cured in eight days.

3. In eleven cases there was no distinct physiological effect produced by the quinine; and it remains to inquire whether recovery was more rapid under this mode of treatment than any other; and this may be best accomplished by instituting a comparison between them and the whole of the other fever patients admitted during the same time. Twelve examples of a very mild form, which might be justly called febricula, are omitted, and there then remain 51 instances of well-marked fever which were not treated by quinine.

Among these, 20 exhibited fever spots on the chest or abdomen, and 6 with and 5 without spots gave unequivocal evidence of ulceration of the bowels. By this is not meant merely the occurrence of thin watery motions, which have been observed in the majority of the patients, but the persistence of diarrhœa, with a patchy, shining, or fissured tongue. We have, therefore, as the basis of our analysis, 26 cases, which neither had fever spots nor distinct evidence of ulceration, 14 with spots but not certain ulceration, and 11 in which the presumptive evidence of ulceration was strong.

The average duration of these cases was—of the 26 cases, 10 days before admission, and 21 days under treatment; of the 14 cases, 8 days before admission, and 28 under treatment; of the 11 cases, 7 days before admission, and 33 under treatment.

Turning now to those in which the quinine treatment was adopted, and almost invariably in ten grain doses every four hours, they include 5 cases in which there was pretty conclusive evidence of ulceration of the bowels, 3 of which were also spotted; 4 cases with spots, where ulceration was not proved; and only two in which neither condition was exhibited. With the last cases it may be best to classify the two already referred to under the second division, because they are not marked by any very broad line of distinction separating them from the present series, and they exhibit the quinine treatment under its most favourable view.

There are, therefore, 4 cases without spots or decided ulceration, of which the average duration was 8 days before admission, and 23 under treatment; 4 cases with spots only, of which the average duration was 10 days before admission, and 26 under treatment; 5 cases with ulcerated bowels, of which 3 had also spots, and their average is 15 days before admission, 37 under treatment.

I must here distinctly state, that when I commenced this report I had no idea what the result would be, and, so far from believing it unfavourable, had hoped that excluding some unfortunate cases, the treatment of fever with quinine would prove rather more speedy, safe, and effectual than by the ordinary modes. I am sorry to be convinced that it has no advantages.

It may be well to state in conclusion, that the prevalent type of fever has been what would be called "typhoid," not true "typhus." One or two had the aspect of congestive typhus, but wanted the purple, mottled rash. One patient had this rash very well marked, mixed with ecchymosed spots, and at the same time had distinct ulceration of the bowels, with a chapped and glazed tongue. Some had a very abundant crop of florid, slightly elevated spots, disappearing on pressure; some had only one or two of this character. Occasionally the spots are characterised as large, sometimes as small; and individual instances occur exhibiting various degrees of persistency, and various shades of colour, from a pale rose to a deep crimson. Spots existed without ulceration and ulceration without spots, apparently without any definite rule; and some of the most severe and tedious cases were unaccompanied by either one or the other.

Without entering at present into the *vexata quæstio* of the exact value of fever spots in diagnosis, these facts are mentioned to show that the cases presented very considerable varieties, but I have not been able to ascertain that the quinine treatment was more adapted to one condition than to another. It appeared in the only two cases resembling typhus in which it was tried, that the depression was greater and produced by a smaller quantity of the alkaloid, than in the remainder, but the instances are too few to draw any general conclusion from them. It is still a desideratum, that similar experiments should be made in the course of a regular epidemic of typhus; for, however otherwise the cases differed among themselves, they had this feature in common, that they were examples of the endemical fever of London.—*Med. Times and Gazette, Jan.* 8, 1853, *p.* 31.

4.—ON THE ACUTE SPECIFIC DISEASES.

By Dr. Wm. Jenner, Professor of Pathological Anatomy, University College; Physician to the Hospital for Sick Children, &c.

[From a consideration of Sydenham's proper or typical stationary fevers, Dr. Jenner imagines they may be defined as follows:—"Acute diseases of definite duration, capable of reproducing themselves, and attended in their course by disseminated lesions of structure." He considers, however, the order to be a more numerous one than Sydenham supposes. Small-pox, erysipelas, measles, typhus fever, scarlet fever, typhoid, and relapsing fever, are sufficiently well marked; but very likely cholera and some others, may ultimately have to be classed as species. Dr. Jenner also makes another order, which he defines thus: Acute diseases of definite duration, attended in their course by disseminated lesions of structure, *but incapable of reproducing themselves*; such are acute tuberculosis, acute purulent diathesis or pyogenic fever, and acute cancer. He then proceeds to point out the peculiarities of each species, necessitating their combination into one class or genus.]

1st. Of the general symptoms which precede the local lesions of structure, and during the whole course of the disease, are out of proportion to them in severity —rigors; abnormally high temperature; pain in the back and limbs; headache; mental disturbance; increased frequency of pulse; loss of muscular power, and general sense of illness; these, it may be said, are common to all, but still they present marked differences and peculiarities in regard of each of the species in question.

A severe *rigor* often ushers in an attack of small-pox, of erysipelas, and of relapsing fever. Rigors are very common, but rarely severe at the outset of typhus fever; they are of infrequent occurrence in measles and scarlet fever.

In typhoid fever rigors are replaced by a frequently repeated sense of chilliness. A rigor occurring so long after the outset of the disease as that which ushers in the relapse in relapsing fever, would, in typhoid fever, as has been proved by Louis, indicate the establishment of some serious local complication.

The *temperature* of the skin, which from the very first is much higher than in health in scarlet and relapsing fevers, is in typhus fever peculiar in kind—pungent, biting, but not particularly high. In small-pox it often, and in typhoid fever occasionally, falls after the appearance of the eruption.

The severity of the *pain in the back* in small-pox is, as is well known, singularly great; in erysipelas it is often complained of a good deal. In typhus fever the pain is usually more severe in the limbs than in the back, while in relapsing fever it is commonly present and often severe in both situations. In typhoid fever, scarlet fever, and measles, the pains in these parts are generally from first to last trifling.

Present in all these diseases, *headache* varies in severity and duration in each. Thus in small-pox it is severe at the moment of invasion, but quickly disappears; in relapsing fever it continues through the whole of the primary attack and of the relapse; in typhus and typhoid fevers it is one of the more constant symptoms at the outset, and in both disappears spontaneously, but some days earlier in typhus fever than in typhoid fever. Headache is by no means a prominent symptom in typical cases of scarlet fever or measles.

The *mind* in scarlet fever, measles, and relapsing fever is unaffected, or active delirium, mild in character, occurs at night.

In typhoid and typhus fevers the power of collecting, directing, and fixing thought first fails, then the power to appreciate the duration of time,—periods of time that elapse between given events are to the patient's imagination lengthened, minutes seem hours, hours days, and days weeks, and rarely, *if ever*, the reverse. In typhus fever this mental incapacity gradually merges into the lower form of delirium. The same happens in some cases of typhoid fever. Occasionally, however, as in small-pox, active delirium is one of the earliest symptoms in typhoid fever, and then, as in small-pox, it ceases when the eruption appears. This probably never occurs in typhus fever.

In small-pox and scarlet fever, measles and relapsing fever, the *general sense of illness* may be extreme; at the same time the patient loses the power of exerting to any considerable extent his muscular powers; he feels and is really weak. In typhoid fever, the loss of muscular power is yet greater; but it is in typhus fever that this is from the first the most marked. In small-pox, measles, scarlet fever, erysipelas, and relapsing fever, the patient ordinarily assigns as the cause for keeping his bed a sense of general illness. In typhoid fever, this is often the case; but in typhus fever, the all but constant reply to the question, Why did you take to bed? is, "Because I was too weak to keep about."

A *frequent pulse* is a symptom common to all the acute specific diseases,—one of their bonds of union; but it is also one of the grounds of their distinction.

In scarlet fever, the pulse at the very outset of the disease attains its maximum rate of frequency, continues at the same rate for a certain number of days, and then gradually falls.

In relapsing fever, the pulse also attains its maximum rate of frequency from the first, beats at the same rate for a certain number of days, and then suddenly falls to its rate in health, or below that. Again, after a limited number of days have elapsed, it suddenly doubles the frequency of its beats, and then a second time, after a limited number of days, falls below the standard of health.

I may remark here, with reference to the very slow pulse observed after the first and second stages of relapsing fever, that the extremely infrequent pulse is due not to any slowness of contraction of the muscular substance of the heart, for the first sound is not lengthened, but to the duration of the pause,—that each beat of the heart appears to be normal, but the time that elapses between the beats, is prolonged, *i.e.*, the pulse is really infrequent, not slow.

The reverse of this is true in reference to the length of the first sound of the heart, and the duration of the pause in some cases of slow pulse in cerebral disease.

Again, as to the ratio between the pulse and the respiration in these cases, the pulse being extremely infrequent, the respirations may preserve their ordinary frequency, fall very slightly, or be a little more frequent than in health. So that, instead of bearing to each other the ratio of 1 to 4, the pulse is often little more than twice as frequent as the respirations, and the two may be almost equal in frequency; thus I have seen the pulse during the stage of convalescence from relapsing fever 36 only, when the respirations were 30 in the minute, no heart, lung, or cerebral disease being present.

The influence of change of position, of muscular exertion, on the frequency of the pulse in these cases, is illustrated by the following facts: the pulse being 48,

the patient lying on his back, rose, on his assuming the erect position, to 116, the respiratory movements at the same time being scarcely more frequent than they were while the patient was in bed.

In typhus fever the pulse slowly rises in frequency to a certain point, preserves that rate of frequency for a variable period, and then as slowly falls. It is well here to remark, that whenever an increase more than may be accounted for by error in observation, *e.g.*, four or six beats in the minute in the frequency of the heart's beats, occur s after the first fall in frequency in typhus fever, that increase is the precursor or accompanies the development of some complication. Thus in the sixth case tabulated, erysipelas commenced with the rise in the pulse. A sudden fall in the rapidity of the heart's beats in typhus fever is occasionally the consequence of intracranial disease, *e.g.*, hemorrhage into the cavity of the arachnoid.

In typhoid fever, the pulse rises and falls in frequency in a most irregular manner,—to-day 120, to-morrow 90, the next day 120,—and this apparently without any relation to the increase or decrease of the general or local affections,—without appreciable cause.

The different influence of free perspiration in diminishing the frequency of the pulse, in relapsing fever and in typhus fever, is illustrated by a comparison of this Table, which is copied from a Report on Continued Fever, by Dr. Flint, Professor of Medicine in Buffalo University, United States, and a Table compiled from my own observations in regard of the pulse in relapsing fever; for, in the cases there tabulated, the sudden fall in the pulse was preceded by profuse sweating:

Influence of Perspiration on the Rate of Frequency of the Pulse in Typhus Fever.

No. of Cases.	Day before Perspiration.	Day of Perspiration.	Subsequent day.
1	120	120 a. m. 116 p. m.	100
2	108	104	104
3	132	124	118
4	108	100	88
5	128	128	120
6	156	134	128
7	110	120	104
8	106	126	136
9	90	100	108
10	111	108	98

It is, then, manifest, that those general symptoms which the diseases of this class have in common, and the possession of which serves, in some measure, to prove their affinity, when closely examined, indicate their want of identity.—*Med. Times and Gazette, March* 5, 1853, *p.* 235.

[Dr. Jenner observes that in six out of seven of these acute specific diseases, the skin is the seat of disseminated vascular engorgement. These are, as before mentioned, small-pox, measles, erysipelas, scarlet fever, typhoid fever, and typhus fever. With regard to the seventh, relapsing fever, the same degree of uniformity of opinion does not exist. The following may be said to be the]

Peculiarities in Respect of the Parts of the Skin Affected.—The eruption in each of these diseases appears first on particular parts of the body, or limits itself throughout to particular parts. In small-pox and measles the eruption shows itself first on the chin, nose, or forehead, and thence invades the whole face. In small-pox the skin of the wrists next suffers, while in measles the rash gradually passes from the face to the neck, thence to the trunk, and subsequently to the extremities. In scarlet fever the eruption breaks out first on the root of the neck, upper part of the chest, loins, and outer aspect of the arms. In typhus fever, the backs of the hands are the seat of the earliest spots; subsequently, the trunk and extremities; and it appears on these parts almost simultaneously. In typhoid fever, spots scarcely ever appear on the face, and rarely on the extremities. They

are, perhaps, more numerous on the posterior surface of the trunk, but their characteristic appearance is best seen on the anterior.

In erysipelas, the inflammation commences about the centre of the face—*e.g.*, over the lower part of the nasal bones—the point of the nose, or the centre of the upper lip, or a little to one side of these parts.

As to the Period after the Outset of the Disease at which the Skin Affection appears, its Course, and Duration.—In relapsing fever, if there be a specific skin affection, it appears on the first day of illness; the rashes of scarlet fever and of erysipelas show themselves on the second; that of small-pox on the third; of measles on the fourth; of typhus fever on the fifth; of typhoid fever on the eighth. While in relapsing fever the duration of the rash is less than twenty-four hours; in measles, three or four days; in scarlet fever, six or seven days; in erysipelas, seven or eight days; in small-pox, ten or twelve days; in typhus fever, ten or twelve days; and in typhoid fever, twelve to twenty days.

In their course, these skin affections present certain peculiarities. Thus, in scarlet fever, measles, and small-pox the eruption disappears first from the parts first affected; so that in scarlet fever, for example, the legs are brilliant scarlet, when the face and trunk have resumed their normal tint.

The eruption seated on the back of the hands in typhus fever often disappears in twenty-four hours, while that which studs the remainder of the surface continues of one uniform shade, over the whole extent, to the last. In erysipelas, the inflammation of the skin spreads from one spot gradually in all directions, ceasing to extend only with the cessation of the disease. Typhoid fever offers this peculiarity, that successive crops of spots follow each other at short intervals, the fresh spots being intermingled irregularly with the old, and the spots which appeared first never continuing till the close of the affection.

The scarlet tint of the rash in scarlet fever; its dusky red hue in erysipelas; its lakelike shade in measles; its mulberry aspect in typhus fever, and the rose color of the spots in typhoid fever; the broad patches of eruption in scarlet fever and erysipelas; the circular irregularly distributed spots in typhoid fever; the crescentic arrangement of the spots in measles and small-pox, and their orderless coalescence in typhus fever; the limited extent of the eruption in erysipelas and typhoid fever, contrasted with its wide diffusion in the other disease—these are characteristics of form, colour, and extent which need only, from our familiarity with them, to be mentioned.

In regard, then, to the skin affection in the diseases under consideration, we observe in each certain peculiarities in respect of nature, situation, date of appearance, colour, form, extent, and duration. With reference to the internal disseminated affections, the mucous membranes suffer the most markedly in scarlet fever, typhoid fever, erysipelas, and small-pox. In measles, however, it is the conjunctival, nasal, buccal, and bronchial; in scarlet fever and erysipelas, the faucial; in small-pox, the nasal, buccal, laryngeal, and tracheal; and in typhoid fever, the bronchial and intestinal. Again, the nature of the affection of the mucous membranes varies in each; in measles, it is active congestion, with abundant secretion from the membrane; in erysipelas, inflammation of a peculiar type, with dryness of the surface of membrane, and serous effusion beneath it; while in small-pox, the tendency is to suppuration; and in scarlet fever and typhoid fevers, to ulceration. In typhus fever, the mucous membranes suffer congestion only in common with other structures, if seated in depending parts of the body. Disseminated inflammations of the serous membranes are remarkably common in typhoid and scarlet fevers; comparatively rare in measles and typhus fever. Enlargement of the spleen is common in and to all; while in typhoid and scarlet fevers and erysipelas it is, especially, that the lymphatic glands suffer.

The *duration* of all these acute specific diseases is limited; neither lasts longer than a month, and many have completed their course long before that time. Not one of them continues more than a given number of days.

As to the mode in which this is determined, from the sudden commencement and abrupt termination of relapsing fever, and the fact that it is usually uncomplicated, there is no difficulty in fixing its duration.

The data for determining the duration of all the other diseases of this class are derived, *first*, from a consideration of the time that elapses between the first symp-

tom of illness and the disappearance of the eruption; and, 2ndly, from a consideration of the appearances found after death. The eruption is one of the specific effects of the action of the exciting cause, *i.e.*, of the poison, seed, or other principle of infection, or of the condition of blood directly produced by that exciting cause, (and its continuance is ordinarily equal in duration, after its first appearance, with that of the specific disease.) The length of the disease is then, at least, the period during which the specific eruption is present, plus the period occupied by the general symptoms anterior to the outbreak of the skin affection.

The second class of data for determining the duration is derived from the examination of the bodies of those who die of these diseases.

Thus, all these acute specific diseases are general diseases, and all may prove fatal without any lesion of structure of sufficient moment to account for death being found. Death results, that is to say, in a certain number of cases of each of these diseases, from the direct action of the poison which induces them, *i.e.*, from the change directly induced in the blood by that poison, or from the changes directly induced on all the tissues and organs of the body by that poison, or by the blood altered by that poison. Now, it is evident that death from this, or these causes, can occur only during the period that the disease itself lasts; therefore, if there be a period in each of these affections, *after which*, if death occur, changes of structure of sufficient moment or extent to account for death are always found, then the specific disease must be held to continue at least up to that time, whatever be the duration of the eruption. Now, experience proves, that in several of these diseases there is such a time, and has shown, moreover, that it is never later in each of the diseases than the time when the eruption fades in typical cases. Thus, the eruption of scarlet fever has disappeared in typical cases, by the ninth or tenth day of disease. If death occur in scarlet fever before the latter date, then experience shows that in a certain proportion of cases, no appearances are found of sufficient importance to account for death; while, if death occur after that date, then death may invariably be explained by the lesions discovered. If in typhus fever, death ensue within twenty-one days after the first symptoms of illness, then may no deviation from healthy structure, such as experience proves to be capable of producing death, be discovered; while, after twenty-one days, extensive alterations of structure are constantly found.

If a case of typhoid fever prove fatal before the twenty-eighth day of disease, then may slight ulceration of the mucous membrane covering Peyer's patches, some enlargement of the mesenteric glands and spleen, be the only aberrations from the normal condition exposed by the most careful examination of the body; while, after the thirtieth day of disease, aberrations from healthy structure of the gravest character may always be demonstrated after death.

On the table are parts of the small intestines from two females, who died respectively on the fifth and fourteenth day of typhoid fever. In neither preparation is the intestinal disease very grave in character, yet scarcely any other change of structure was detected. For the one preparation I am indebted to my friend Dr. Sankey, and for the other to my friend and colleague Dr. Parkes.

It is, then, by a consideration of the period that elapses between the outset of the disease, when the invasion has been sudden, and the cessation of the eruption; and the period of the first symptoms, when also the invasion has been sudden, at which, if death occur, no lesions of structure to account for death are to be found, that we determine the duration of the acute specific diseases.

By the aid of the latter of these two points, it is, especially, that we are enabled to separate the duration of the illness from the duration of the specific disease. Practically, in regard of some of these diseases, this separation is generally, because readily, effected: the duration of the specific disease being determined by the duration of the symptoms of invasion and of the eruption, the physician seeks for the complication by which the symptoms of illness are kept up. No one would say scarlet fever had lasted for seven weeks, because a person suffering from that affection had pleurisy established in its course, which pleurisy, passing into a chronic state, ran a course of six weeks. If such a case proved fatal, it would be at once admitted that the patient had died of a disease which had commenced during the progress of the scarlet fever, and continued after the latter had ceased. The same admission would be equally correct, even though the disease of which the patient

died was one of those which, in a mild or severe form, invariably accompanies scarlet fever, *e.g.*, the throat affection; thus, in a case I saw lately, sloughing and ulceration of the fauces—established by the action of the specific disease—continued to progress after the latter had itself ceased, and ultimately caused the patient's death two or three weeks after the scarlet fever had terminated. I say, in regard of scarlatina and some other of these diseases, this separation of the duration of the specific disease from the duration of the illness is made, and consequently the former can have assigned to it as definite a duration in complicated as in uncomplicated cases,—in those unattended by an eruption as in those attended by an eruption. But in regard of typhus and typhoid fevers, the line in question has not been drawn, and we find, consequently, the duration of the latter said to be sometimes as much as sixty days, and that when no relapse has occurred. This confounding the duration of the illness with the length of the specific disease is an error into which I think some of the most able writers on these diseases have fallen. In typhoid fever, as in scarlet fever, there are two classes of lesions of structure discovered after death—1st, those which are invariably present; and, 2ndly, those which are more or less frequently the result of the disease. An instance of the former is ulceration of Peyer's patches; of the latter, pleurisy and pneumonia. Now, having been established in the course of the specific disease, either one of these may continue to progress after that has terminated, and all the general effects of ulceration of the small intestines, or of thoracic inflammation, be the result. The pulse may continue frequent, the skin hot, and the patient be delirious, and yet the fever may have ceased, the specific disease have terminated.

Determined by the data to which I have referred, each of the acute specific diseases has a definite duration, *i.e.*, with regard to each there is a date capable of being fixed absolutely, by which time the patient either dies, or, so far as concerns the specific disease, recovers.

The duration is different for each species; thus, for measles it is 7 or 8 days; for scarlet fever, 8 or 9 days; for erysipelas, about 14 days; for small-pox the same, supposing in all four the eruption to have made its appearance on the typical day; while, without regard to the date of the appearance of the eruption, it is in typhus fever 21 days, and in typhoid fever 30 days.

If, therefore, health be not restored soon after these dates, we may be certain that some other than the primary affection is the cause of the continuance of the symptoms. And, again, if for either of these diseases a specific exist, or a special treatment be proper, it is manifest that that specific or that treatment can be expected to exert a favourable influence only during so many days from the outset of the first symptoms as the specific disease has been proved to exist.

The conclusion as to the duration of typhoid fever at which I arrived from a consideration of the points just referred to, has recently been fully confirmed by a consideration of a different class of facts.

Dr. Zimmerman lately published two papers in the *Deutsche Klinik*, on typhoid fever. He determined the duration of the disease thus: He noted the temperature of the patient daily, and found that the thermometer indicated that the fever ceased some time between the 21st and 28th days; that is to say, then, for the first time after the commencement of the illness, the thermometer being introduced into the mouth, the mercury stood at the point at which it stands when placed in the mouth of a healthy person. Up to the same date of the disease, the patient was proved by the balance to lose weight daily, while from that date he was proved to gain weight rapidly: thus, a patient who weighed before his illness 170 lb., on the 22nd day of disease weighed only 119 lb., and on the 26th day only 117 lb. On the 30th day he was found to have gained 3 lb., *i.e.*, he weighed 120 lb., and on the 39th day his weight was 124 lb.; no alteration in his diet of sufficient consequence to account for the increase having been made.

The last point common to all these diseases is, that they have a *specific cause*. But although all are capable of reproducing themselves, there is not one which does not sometimes arise under circumstances in which it is impossible to trace the existence of any source of contagion,—that is to say, there is not one which does not sometimes appear to arise spontaneously. But the frequency with which this happens differs considerably. It rarely happens that cases of small-pox, the disease not being epidemic, are unable to be traced to their origin. The inability to refer

the disease to contagion is more common in respect of cases of scarlet fever, measles and typhus fever, while the contagious nature even of erysipelas and typhoid fever has been called in question. Nay, it was long held that typhoid fever differed from typhus fever for this reason among others, that while the latter was contagious, the former possessed no power of reproducing itself. The memoir of M. Piedvache, 'Recherches sur la Contagion de la Fievre Typhoide, et principalement sur les Circonstances dans lesquelles elle a lieu, per Joseph Piedvache, Paris, 1850,' has for ever laid this doubt. That observer has shown that if the conditions of development be given, typhoid fever has the power of reproducing itself, and has adduced several instances in which persons in attendance on cases of typhoid fever not only contracted the same disease, but, having been removed while ill to houses situated miles distant from the primary case, and where no fever existed, communicated the disease to their relatives and friends. As a rule, those only had the disease, who, in imperfectly ventilated rooms, were in close and continued communication with the sick man.

But let the cases of that disease collected together be numerous, and the attendants fully exposed to the effluvia, and it will spread among them in the best ventilated places as freely as typhus fever. For example, the number of nurses who suffered from typhoid fever during the time I visited the London Fever Hospital was as great as the number of those who had typhus fever, while, during the same time, one of the medical attendants had typhus fever, and just before one had died of typhoid fever.

It would appear that the seeds of these specific diseases differ from each other, like the seeds of plants, not only in requiring more or less different conditions for their development, but also in the facility with which their germinating powers are destroyed.

I cannot call to mind a single instance of a case of small-pox being received into the wards of a general hospital without the disease spreading to one or more of those in relation or proximity to it; while I can remember only two instances of the extension of typhoid fever when cases of that disease were scattered through the wards of a *general* hospital; and in these cases it was the friends of the patient—the mother, in one instance, who had watched by her son night and day—who suffered.

The following facts, given by Dr. Flint, of Buffalo, are of interest, as bearing on this point and some others connected with the means of the propagation of the contagious diseases. At North Boston, Erie county, United States, in 1843, resided nine families. Taking a tavern for the centre, seven of the nine lived within an area 100 rods in diameter.

All the inhabitants, with the exception of the members of one family, were in the habit of frequenting the tavern. A feud existed between the master of that one and the tavern-keeper. A man labouring under typhoid fever (a disease previously unknown in North Boston) took up his residence at the tavern, September 21, and died October 29th.

Between October 29th and December 7th, twenty-eight persons in this little community had typhoid fever. Three families only escaped the disease, viz., the two residing the farthest from the tavern, and that of the man who had a quarrel with the tavern-keeper, and who, consequently, never visited at his house. Now, a fact of interest in this case is, that all the families in which the disease appeared drew their supply of water from the well of the tavern, while two out of the three that escaped had their water from other sources.

The man at feud with the tavern-keeper was accused of having poisoned the well of the tavern. He resided nearer than any of the others to the tavern. None who visited the village simply for the purpose of rendering assistance to the inhabitants, contracted the disease.

In concluding this review of the typical causes of the acute specific diseases, I would observe, that, as the pathological tendency

of small-pox	is to produce	inflammation and suppuration;
of measles	"	active congestion;
of scarlet fever	"	inflammation and ulceration;
of typhoid fever	"	inflammation and ulceration;

of typhus fever is to produce congestion and extravasation of blood;
of erysipelas " inflammation and effusion of serosity;

it is probable that the pathological affinity of typhoid fever is with scarlet fever rather than with typhus fever or relapsing fever; and that the pathological affinity of typhus fever is with measles rather than with typhoid fever or relapsing fever; while the symptomatological affinity of relapsing fever is with the class of diseases in which intermittent fever ranks, rather than with typhus fever or typhoid fever, although etiologically its place is among the acute specific diseases.

Small-pox.—I have already remarked, that the deviation from the type of small-pox in the confluent variety is due to the extent and severity of the specific local process.

Symptomatologically considered there are three, and pathologically considered two, distinct varieties of small-pox included under the term "malignant small-pox."

In the first symptomatological variety, the severity of the general specific disease is evidenced by the patient dying before any local disease whatever is established.

In the second, the severity of the general specific disease is manifested by the softened state of the solids, and the ready solubility of the organised elemen s of the blood; the effects of which are hemorrhage from innumerable small vessels in various parts of the body, the effusion of serosity dyed red by dissolved hæmatosin, and diminution of muscular power, cardiac as well as voluntary. The cerebral functions in these cases are often unimpaired.

While the third variety is characterised by so-called typhoid symptoms; *i. e.*, by frequent pulse, dry and brown tongue, low delirium, and great prostration,—characters which it owes either to the severity of the general affection, for they are sometimes present when the pustules are few in number and distinct,—or to the presence of severe local complications. Thus, in a case I witnessed of this kind, when the patient was progressing favourably, the evidence of pneumonia being established, was quickly followed by typhoid symptoms. On examination after death, the interlobular septa of the lung were found infiltrated over a considerable space with purulent-looking fluid.

Typhoid Fever.—The cases of typhoid fever met with in practice may be grouped under the following heads:—The typical, the mild, the grave, and the insidious, simulative, or latent.

Time permits me only to sketch the last; and this I shall do at some length, because I believe the cases included in it are often misunderstood.

The insidious, simulative, or latent variety of typhoid fever usually commences most gradually, the patient being altogether unable to say on what day he first felt unwell; nay, sometimes he cannot fix within a week or ten days the outset of his illness; rarely is he able to say what the first symptoms from which he suffered were. He seeks aid from the physician because he feels "poorly;" he deferred seeking aid before, because "he hoped to shake it off." His bowels have been, he says, somewhat "out of order," his head has ached a little, and perhaps he has had trifling cough. He thinks he must have caught cold. Now and then, one or other of the symptoms mentioned are especially complained of. Less commonly, pain in the limbs and back are troublesome. The patient has not given up his ordinary employment, but he feels, as he describes it, "not up to it." He lies in bed as late in the morning as his occupations permit him; when he rises, feels weary and fatigued, and at night scarcely able to undress himself. His appetite is lost; more or less diarrhœa is usually present; sometimes, however, the bowels are constipated. The tongue is often large, pale, and but slightly furred. It is generally somewhat tremulous. If the case be not understood, the patient gradually growing less able to exert himself, ceases to leave the house, or, if he still goes out, it is for a short time only. The greater part of the day he spends in bed or on a couch. At night he is restless, and disturbed by thirst and a sense of heat,—"eaten up by fever," as he calls it.

In this state, if the case go on favourably, the patient continues one day better and another worse, but always losing flesh for about a month, and then he begins to mend, and after another week or two feels pretty well.

For many years some of these cases puzzled me much. A pulse somewhat

quickened only, a tongue not greatly differing from that of health, and no marked heat of skin, trifling frontal headache, a little sonorous râle, and slight irregularity of the bowels, seemed local ailments altogether insignificant, and yet the patient continued ill, and often appeared worse to his friends than to me, for they saw him at all times, I only when he was aroused to exertion. I have supposed the case to go on well; but in some instances it terminates fatally by hemorrhage from the bowels, or perforation of the intestine, and then the patient dies in a few days, to the surprise of those who have watched the progress of the case.

In these latent cases, the physician has often but to be aware of the possible nature of the illness to detect it. The confirmation follows immediately on the suspicion; for, if the surface of the abdomen and thorax be carefully examined, in a large number of cases, the rose spots, which, when well marked, are as characteristic of typhoid fever as are the small-pox pustules of small-pox, may be detected.

But in a certain proportion of cases, on the most careful search, not the trace of a spot can be seen.

Still the diagnosis may usually be made with certainty. The conjunction of frontal headache with diarrhœa is rarely observed except in cases of typhoid fever; and if to these symptoms be added a sense of weakness disproportioned to that which might be occasioned by the diarrhœa, trifling sonorous râle, with a want of steadiness in directing or keeping up, even for a short time, trifling muscular effort, *e. g.*, a little unsteadiness of the tongue when fully protruded, a little wavering of the hand when the arm is extended,—the diagnosis of typhoid fever may be considered absolute, even though the heart's beats be scarcely quickened, the tongue be moist and almost clean, and the patient able to leave his room for the greater part of the day. Ordinarily, in the cases of which I am speaking, the abdomen is somewhat more resonant than natural, a little "blown," as it is called, and gurgling, on careful manipulation, may be detected in the right iliac fossa; the splenic dulness, too, is extensive.

In some cases which commence as the one I have just sketched, after 16 or 17 days have elapsed, the febrile symptoms become more marked, and in a few days the tongue is brown, sordes collect about the teeth, and prostration is considerable; then the disease is said to run into typhus fever.

In other cases cough and sonorous râle are the most prominent symptoms, and then the patient may be supposed to be labouring under a mild but protracted form of bronchitis. A fourth set of cases, from the presence of redness of the tip and edges of the tongue, and the marked character of the intestinal disorder, are called by some "mild gastric-fever," or "muco-enteritis."

While, in a fifth set, the symptoms are so trifling that the patient and his friends resort for an explanation of his illness to those English disorders, a bad cold or an attack of the bile, while the medical attendant sees protracted influenza, irritative dyspepsia, or error in diet.

Scarlatina.—Passing by those forms of scarlatina which are never fatal, I will enumerate the apparent causes of death in the fatal cases I have examined.

For this purpose I may divide the cases into two groups, viz., those which proved fatal during the first week, and those which proved fatal after the first week. Of the first group some died before the appearance of the rash.

The following are the particulars of a case of this kind which came under my observation in 1851:—

A man, about fifty years of age, his wife, and three children, resided in two small rooms opening into each other, in an imperfectly drained house.

Between May 15th and 29th the woman and the three children were attacked with scarlatina. The man slept during the whole time in the same bed with his wife and sick children. On June the 1st, about noon, *i.e.*, after eating, drinking, and sleeping in an atmosphere highly charged with the emanations from those suffering from scarlatina for 17 days, this man complained of sore throat.

On the 2nd, about noon, he became suddenly insensible, and near midnight was admitted into University College Hospital. At that time there were a few dusky red patches on the skin, the surface was cold, the pupils large, and the pulse scarcely to be felt. The man continued very restless to the last, and at no time

after he came under observation could he give any account of himself. An hour or so before death petechiæ appeared on the skin.

He died at 3 a.m. on the 3rd, *i.e.*, less than forty hours after first suffering sore throat.

When the body was examined on the 4th, the whole surface had a purplish, mottled aspect. Small spots of extravasated blood were found in the cutaneous tissue, under the pleuræ, pericardium, endocardium, peritoneum, and gastro-intestinal mucous membrane.

The tonsils were enlarged, and in common with the mucous membrane of the *velum pendulum palati* and pharynx, highly vascular. The spleen was large, and there was some engorgement of the vessels of the pia mater.

In some of the cases I have examined which proved fatal during the first week, the rash being fully developed, careful examination after death has not enabled me to detect any great change of structure. In some of these cases the general symptoms have inclined to an inflammatory, and in others to a typhoid type. In neither set of cases were the symptoms referable to the specific throat affection very prominent during life. The structural changes of extent or severity that I have found in other cases fatal during the first week, have been—

a Sloughing of the tonsils.

b Ulceration of the pharynx and larynx.

c Intense redness of and granular lymph—the croupose lymph of Rokitansky—on the mucous membrane of the pharynx, larynx, and stomach.

d Abnormal vascularity of the cellular tissue and lymphatic glands in the vicinity of the parotid gland, and of the cellular tissue uniting the lobules of the gland itself, with excess of serosity in the same tissues.

e Blood on the free surface of the arachnoid, without evidence of the rupture of any vessel appreciable by the unaided eye.

The grave structural changes I have found in those cases which have proved fatal after the first week—*i.e.*, after the rash had disappeared, have been—

Sloughing and ulceration of the fauces and pharynx;

Post-pharyngeal abscess;

And which is often termed parotid bubo.

Under this latter term are comprised the following pathologico-anatomical conditions—viz., inflammation and suppuration of the cellular tissue around the gland.

Inflammation and suppuration, chiefly of lymphatic glands over or near to the parotid gland. In either of these cases the purulent fluid may be diffused among the structures, infiltrate them, that is to say; or it may be circumscribed or collected into an abscess.

Inflammation and suppuration of the parotid gland itself. In these cases the pus is diffused through the cellular tissue, dissecting the lobules of the gland from each other.

The remaining serious lesions I have found, after the disappearance of the rash, have been the effects of local inflammation, especially pleurisy and pneumonia, and collections of pus in several parts of the head, trunk, and extremities.

The death, then, in all these cases, can readily be referred to the extreme severity of the general specific disease, to excess of the local specific process, or to the occurrence of complications.

In *scarlatina simplex* and *scarlatina sine eruptione* the specific general disease is moderate in degree, and the specific throat or skin affection trifling in amount or absent. The complete absence of any affection of the fauces must, I think, be very rare, for no instance of it has fallen under my observation. In a tolerably large number of cases, the patient has complained of sore throat: but inspection of the part, in all such cases, has proved the presence of abnormal redness. In scarlatina anginosa the severe and inflammatory character of the throat affection gives a peculiar aspect to the case. The skin affection may, at the same time, be highly or imperfectly developed.

Under the head of *scarlatina maligna* are included several symptomatologically and pathologically distinct varieties of scarlatina.

1st. That variety in which death takes place a day or two after the first symptoms of disease.

2ndly. That in which the specific local processes of the skin and throat are fully, but not excessively developed, and the patient dies comatose, or sinks suddenly, while the rash is well out, or immediately after it has faded.

3rdly. That in which the eruption is dusky; petechiæ stud the skin; the tongue is dry and brown, the pulse rapid and feeble, and the prostration extreme, and at the same time a tendency is manifested to gangrene of the throat, and also of all parts exposed to pressure.

4thly. That in which, at a very early stage of the disease, acrid discharges escape from the nose, eyes, and ears; the tonsils are greatly increased in size, and, in common with the uvula, *velum pendulum palati*, and pharynx, are red; the parts behind the rami and angles of the lower jaw are considerably swollen; the pulse rapid and feeble; and the rash more or less imperfectly marked.

In this variety, which is so common in strumous children, all the mucous membranes referred to are the seat of ulceration. I have seen, under these circumstances, a patient recover after losing the sight of both eyes from destruction of the cornea, and having the sense of hearing greatly impaired by ulceration of the membranæ tympanorum.

Measles.—A case of measles, in which the disease has assumed a typhoid type; a case of measles, in which death has been caused by the specific disease; a fatal case of measles, in which no local complication existed, has not fallen under my observation.

As in scarlet fever, either of the specific local processes, viz., the skin eruption or the catarrhal symptoms, may be absent, or, being present, may vary in severity. But it is chiefly from the presence of complications that marked deviations in particular cases of measles from their type arise, and to cases with such complications, chiefly, that the term "malignant" has been applied.

Typhus Fever.—Cases of typhus fever deviate from the type of the disease chiefly in the greater mildness or severity of the general symptoms, and in the extent and intensity of the specific skin affection. As a rule, the milder the case, the less marked the rash. The danger of the disease is in proportion to the gravity of the general affection, local complications rarely occurring in mild cases to modify the features of the disease. The general symptoms are sometimes so trifling, that the patient hardly needs to keep his bed; while, on the other hand, they are sometimes so severe, that the patient dies within a few hours, constituting the typhus siderans of some authors. The only complication which I have seen causing any material deviation from the type, is inflammation of the intestinal mucous membrane. The symptoms indicating this complication are tympanitic distension of the abdomen, and diarrhœa. After death, there is intense vascular engorgement of the mucous membrane, with a variable quantity of the granular, croupose, or diphtheritic variety of lymph on its surface. In some cases the inflammation is limited to the mucous membrane of the colon; in some cases the inflammation passes the ilio-cæcal valve, and in others is said to be limited to the small intestine; but it never exhibits any tendency to affect Peyer's patches except in common with the mucous membrane of the whole circumference of the intestine. Typhous deposit, as it is called, is never found in typhus fever.

Relapsing Fever.—In relapsing fever the most common deviation from its type is produced by a functional disorder of the liver, which manifests itself by jaundice. I never saw jaundice in typhus or typhoid fevers, though this drawing of the ileum of a soldier, belonging to a native regiment at Sierra Leone, renders it probable that in some countries jaundice does occur in typhoid fever, and also that cases of that disease are confounded, under such circumstances, with yellow fever.

The hue of the skin when jaundice occurs in relapsing fever varies from slight sallowness to intense yellowness. At the same time that the skin is yellow, and bile is present in the urine, the stools contain an abundance of bile, and if death occur the gall-bladder is found full, and the cystic and common ducts pervious. Doubtless, some of the cases known in practice as jaundice from hepatic congestion, are in reality cases of relapsing fever, and a suspicion of this should always cross the mind when a patient is suddenly seized with febrile symptoms and yellowness of the skin, the stools being at the same time dark coloured. In relapsing fever epigastric tenderness is often a prominent symptom. In the second variety of relapsing fever there are lividity and coldness of the surface; a feeble and fre-

quent pulse; delirium of a low type; drowsiness, unconsciousness, and rapid death from asthenia. Jaundice may or may not be present in these cases.

Erysipelas.—There are three great varieties of erysipelas in addition to the typical. I have twice examined fatal cases of erysipelas after death without detecting any marked departure from healthy structure, when during life a little dusky redness about the nose and the most trifling redness of the throat had been the only direct evidence of the disease. The general symptoms were delirium, at first active and then muttering, followed by somnolence and stupor.

The peculiarities in the other two varieties are dependent on the effects of the severity of the inflammation of the skin and subcutaneous tissue in the one case; and on œdema of the loose cellular tissue about the entrance into the larynx, especially that of the arytæno-epiglottidean folds, in the other.

In regard, then, to the deviations from the typical forms of the acute specific diseases, the extreme differences observed in the general aspect of the patient are most commonly due to the severity of the general specific disease in typhus fever and relapsing fever; to the severity and extent of the specific local processes in small-pox and erysipelas; to the presence of local complications in measles; and as often to the severity of the general specific disease as to the extent and severity of the specific local processes and their immediate effects in scarlet fever and typhoid fever.—*Med. Times and Gazette, March* 12, 1853, *p.* 259; *and March* 26, *p.* 311.

5.—*Belladonna as a Prophylactic in Scarlatina.*—[We hear a great deal from the homœopathists of the efficacy of this drug in scarlatina. The following testimony against this efficacy is worth their consideration, and shows the utter fallacy of their reasoning, and the sandy foundation on which they build their views. At a meeting of the Medical Society of London,]

A long and somewhat desultory discussion took place on this subject, having had its origin in a question asked by Mr. White. Mr. Brown had found belladonna to invariably arrest the poison of scarlatina. Mr. Dendy had no doubt that its administration as a prophylactic mitigated the throat symptoms very materially; but Dr. Rodgers had abandoned its use after a fair trial, from observing that many persons had the disease after the administration of the medicine. Dr. Radcliffe had used it extensively; but the very worst cases of scarlet fever which had fallen under his notice were those in which belladonna had been given as a prophylactic. Mr. Roberts had tried it in a great number of cases, but had abandoned it, from his complete disappointment in its effects. Dr. R. M. Glover remarked, that the trial of belladonna on a great number of cases, in the hands of some of the most careful observers, had ended in its failure; and Dr. Snow, Mr. Clarke, and Dr. Chowne contended that the negative evidence brought forward in support of the efficacy of the "remedy" weighed as nothing in the balance against the positive facts which had been adduced against it.—*Lancet, Nov.* 27, 1853, *p.* 503.

6.—THE FIBRINOUS CONSTITUENT OF THE BLOOD IN RELATION TO DISEASE.

By B. W. Richardson, Esq.

[In this paper, read before the Medical Society, Mr. Richardson proved "that fibrinous concretions were capable of being formed while the processes of life were going on." Then he asks the question, "Is it an exudation from the inner membrane of the vessel, or is it a direct deposit from the blood?" In reply, he says, those of large size *are* direct and true deposits from the blood. Mr. Richardson further stated, that fibrine existed as *bonâ fide* fibrine in the blood.]

"The cause of fibrinous deposits during life" now came under view. It was necessary, on entering on this enquiry, to consider what were the agencies which prevented the coagulation of fibrine during life? Several theories had been proposed in reply to this question. The nervous influence had been assigned as the cause of the fluidity of fibrine in the circulating blood by some writers, the vital principle by others, and the solvent power of the blood by a third class. The two first hypotheses were untenable altogether, inasmuch as they were removed from

the influence of the reasoning faculties; and the last (a theory) was incorrect in fact. The author had tried the influence of saline solutions on fibrine in the most careful manner, and had found that all saline substances, when perfect in the matter of chemical combination, had no solvent power over fibrine. He believed that the discrepancies which were to be found amongst writers on this matter had arisen from the circumstance, that different experimentalists had employed salts varying slightly in their chemical nature. The one employing a salt containing a little excess of acid or of alkali, had found fibrine partially soluble in a solution of that salt; whilst another, employing a perfectly neutral salt, had found fibrine insoluble in a solution of it. The author himself was of opinion, that, in normal conditions of the blood, the fibrine was in a mere state of suspension; and that the agents requisite to secure this suspension were a proper amount of motion, a proper degree of temperature, and the continual and rapid development of the three processes,—reproduction, dissolution, and elimination. A combination of simple, and yet striking evidences, added peculiar force to this supposition. Thus the idea of its suspension in the blood was quite in accordance with the ultimate application of fibrine; being suspended merely, it entered the more readily into the composition of muscle, undergoing, in fact, a mere process of deposition. Suspension, moreover, implied removal from chemical influences and stability in the matter of quantity,—a property which fibrine really possessed. But the most striking proof was the fact, that fibrine in the circulating blood obeyed the same laws as did other dense fluids when mechanically suspended in liquids lighter than themselves. Thus, if the motion of the blood was arrested in any part of the vascular system, as by passing through a dilated artery, over a roughened surface, or past an obstructing barrier, the result was retardation of the current, and a deposit of fibrine consequent on the retardation. In normal states, then, fibrine was merely suspended in the blood, and existed there in a certain proportion. But in other states, it underwent various changes; it might be diminished in quantity, or be almost wanting altogether; or, secondly, it might be increased in quantity; so increased that its mechanical suspension was rendered impossible, and then there was nothing for it but that the superfluous portion obey the laws which lead to deposition, and become formed at some favouring point into a fibrinous concretion. But why should increase of fibrine take place? some one might inquire. This question was most important, and in answering it the author would direct the attention of the Society to one or two facts with reference to the formation of fibrine. There could now be no doubt that the presence of oxygen in a certain proportion in the body, and the presence of a moderate degree of temperature, were both necessary to secure the due formation of fibrine. Dr. Gairdner had shown that if an animal were made to breathe pure oxygen for a little time, the fibrine of its blood was increased in amount. He (Mr. Richardson) had carried Dr. Gairdner's experiment further, and had found that if an animal were made to breathe for a great length of time an atmosphere containing an excess of oxygen it sank and died at last, its heart loaded almost to bursting with fibrinous concretions. [Some fine specimens of fibrinous concretions, which had been taken from the heart of a young cat killed by this process, were at this moment handed to the president.] Thus, then, the mere inhalation of a superoxidized atmosphere was sufficient to produce an overplus of fibrine. The author was not yet certain whether a condition of atmosphere capable of giving rise to such results ever existed; the subject required further investigation. There were other circumstances capable of causing the increase in question; 1st. Fibrine might be relatively increased from deficiency of some of the other blood constituents. 2nd. It was evident that if respiration could be rendered too quick, a larger amount of blood than was normal would be exposed to the atmospheric influence, and then would the fibrine be increased. This was, however, rarely a primary condition, and there remained, the speaker opined, a much more common cause for excessive oxidation of the blood in general, and of fibrine in particular. The mention of this idea led him (the author) to introduce incidentally a new theory as to the cause of inflammatory fever and inflammation. It was a law in the animal economy, that all the elements which entered into its composition should pass off from the body by the various eliminatory processes, just in proportion to their introduction into, and distribution through, the body; thus, oxygen, carbon, hydrogen, nitrogen, were, in health, ever being eliminated by the skin, by the lungs, by the kidneys, and so

on. Now, if from any external physical cause one or other of these eliminatory functions were arrested, the function of the skin say, the results were these—Either some other eliminating organ performed additional duty until balance was restored, and the system saved, or else the suppressed elements, viz. the grand supporter of combustion, oxygen, and the combustible bodies, hydrogen and carbon, were carried a second time round the system, were reburned and made to go through a second series of metamorphic changes, thus giving rise in the first instance to that heated, excited state of system called inflammatory fever, producing an abnormal increase in the fibrine, the salts, and some other of the blood-constituents, and eventually leading, if a counter agent were not forthcoming, to the concentration of this super-activity in some favouring structure or organ, and to the process called inflammation—a process which is, in fact, nothing more than the too rapid development in some special organ of the three successive acts, reproduction, dissolution, and elimination.

From these readings of the subject, it would easily be seen, the author thought, how it was that superfibrination of the blood attended inflammatory diseases: why fibrine exuded from serous membranes in some such diseases; and why it was deposited in masses in the circulating system. He was particularly anxious to dwell on the opinion that suppression of one or other of the eliminatory processes gave rise to the results he had described, and he illustrated the question by the analogical observation, that the system, under the circumstances named, was made for the time "to consume its own smoke," an act quite incompatible with health. Mr. Richardson, at this point, proceeded to show the practical nature of the subject he had chosen; he confined his attention to the effects of fibrinous deposits —these deposits might take place in any part of the circulating machinery, and the symptoms they produced varied consequently; forming in the heart, they produce their special effects in at least five different ways. 1st. They may be developed in the course of almost any acute inflammatory complaint. 2nd. They may be developed suddenly, and produce the most alarming symptoms, the patient having shown but few previous indications of acute disease. 3d. They may give rise to symptoms peculiar to themselves, throughout long periods of time, no other disease being present. 4th. They may give rise to sudden death, without having previously produced any special symptoms. 5th. They may follow in the course of some exhausting diseases, and in a secondary manner hasten a fatal termination. After the statement of these general rules, a minute description of the various symptoms which fibrinous concretions produce was given, and at the conclusion of the paper a few illustrative pathological specimens were shown, from one of which it was demonstrated that these concretions, when occurring in arteries, are cylindrical like the vessel itself.—*Med. Times and Gazette, Feb.* 12, 1853, *p.* 177.

7.—ON CANCER.

(From a Review of Dr. Lebert's work, by Dr. W. H. Walshe.)

[The peculiar milky juice of cancer is insisted upon by Dr. Lebert as an unfailing test of the presence of cancer by the naked eye. Dr. Walshe, however, remarks, that though *almost* an unfailing proof, still it may, in some cases, prove deceptive. Dr. Lebert also observes, that the cancerous or non-cancerous nature of a morbid tissue may be determined by microscopical examination, though he is not so positive about any single isolated cell. He says,]

The type of the cancer-cell is a "small regular sphere, with an elliptical nucleus, placed excentrically, filling nearly the half, or upwards, of the interior of the cell, and containing one or more large nucleoli." But this typical form is often not maintained with purity; the cell-wall assumes an ovoid, elongated, or triangular shape, with acute or obtuse angles. According to M. Lebert, it may even be of true "fusiform" outline—a shape we have never seen; all varieties of "shapelessly caudate" form, we agree with him in recognising as of occasional, even tolerably frequent, occurrence. To this multiplicity of contour much importance, and with good reason, is attached by the author; and he fairly urges that if similar diversity

may be found, on superficial examination, in epidermic tumours, it can always with ease be traced, either to folding or some morbid change of the epidermic cell.

[Dr. Lebert subsequently acknowledges that the most baneful cancer may run its course through the system without exhibiting its (said to be) characteristic cells; thus confirming the observation made by Dr. Walshe some years ago, to the effect that]

A tumour may present to the naked eye the characters of encephaloid, be the seat of interstitial hemorrhage, affect the communicating lymphatic glands, run in all respects the course of cancer, and nevertheless contain no cells but such as are undistinguishable, in the present state of knowledge, from common exudation cells.

M. Lebert very justly raises his voice against the doctrine of the "degeneration" of non-cancerous tumours into cancers. The notion, indeed, one of the most flagrant heresies in pathology, could not survive an hour, did it not furnish so convenient a loophole of escape from errors in diagnosis. A given tumour is pronounced by experienced persons, at an early stage of its growth, to be non-cancerous. It enlarges, and is cut out. The qualities of cancer are recognised. But no error, it is held, has been committed; the tumour was, in truth, of innocent nature at first; it subsequently "degenerated." Now, in point of fact, degeneration by conversion is an impossibility, and the only way in which the change from non-cancerous to cancerous character could be effected, is by the *de novo* development of cancer within the area, and from the vessels, of non-cancerous formation. Experience proves, that while there is no *à priori* impossibility of its occurrence, such development is infinitely rare; for our own parts, years ago we wrote that we had searched in vain for an example of it in fibrous tumours, its alleged most common seat, nor have we succeeded since. M. Lebert states that he has twice known cancer form in tumours, primarily non-cancerous, but does not mention their nature. It must, then, be admitted, that in excessively rare cases a change simulating "degeneration" to the merely practical eye, does actually occur; but this is a very different thing from real degeneration, being a common phasis of evolution of non-cancerous growths.

Authors in general admit that cancer destroys life in various ways. The writer of the present volume professes a different doctrine. He has met with such a number of cases of deaths from the progress of a *single* cancer (unattended with secondary formations) "in which there was neither abundant suppuration, nor repeated hemorrhages, nor serious functional disturbances, to cause death," that he has "come to the conviction that cancer kills, after a certain duration, by *general death of the system*, and not by a purely local affection—by *infection of the entire economy*, and not by incidental disturbance of an important organ. Cancer kills by depriving the blood of the power of sustaining life, not by causing loss of blood either unchanged or altered through exudation." That the condition of blood existing in cancer is capable of killing seems certain; but M. Lebert's notions would lead us to attach too little importance to all morbid conditions beyond that fluid. Still, he argues his case pertinently:

"The reaction produced by secondary cancer, even when this is serious in character, is often so little apparent, that frequently, no matter what attention has been paid to the case clinically, during life, secondary formations are found in organs where no one expected their existence. Again, compare the bodies of two individuals, both cut off by a cancerous growth, which ran its natural course without disturbance, but the one presenting a single cancerous tumour only, the other numerous secondary formations, and you will certainly not find a great difference in the two bodies in respect of amount of discoloration, emaciation, atrophy of the tissues, and impoverishment of the blood.

The importance of this doctrine in regard of treatment would be extreme, could M. Lebert afford us the material demonstration of the blood-alteration which he regards as so all-efficient. Here, however, he fails, as all who have gone before him. But who has proved alteration of blood, impregnated with syphilitic virus? And yet who doubts its existence? The day will come, however, and in all probability before long, when actual microscopical and chemical demonstration of the incipient alterations of the blood in diathetic diseases, as a class, will be obtainable, and so a material basis formed for the now prevalent conviction that there is a

condition of the fluids capable of being therapeutically handled, which precedes local manifestations of the disease in each diathetic affection.*

[Cancerous diseases are not to be cured by medicine. Upon this point M. Lebert is positive enough, and condemns all reputed cures thus produced as erroneous. At the same time, however, he acknowledges that the day may come when we may antagonize cancerous poison as we do that of intermittent fever by bark, or constitutional syphilis by mercury.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 92.

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8.—*On the Treatment of Cancer.*—M. Devay (Gaz. Méd., 1852, No. 52,) of the Hôtel Dieu Lyon, has long been engaged in investigating the therapeutical properties of conium in cancer, being of opinion that Storck's experiments should be resumed, with the aid of the improved chemical knowledge of the present period. He finds the best preparations to be an extract and balsam, containing 1 per cent. of conicine, made from the seeds of the plant, gathered when at maturity, of full weight, and of ash-grey colour. As the result of his researches he states,—1. That an ointment, applied externally, in chronic enlargements of scrofulous glands, possesses a resolvent power greater than that of any other substance. 2. In engorgements of the uterus, or inflammatory hypertrophy of the organ—so frequently complicating its prolapsus or deviation—this medicine, employed internally and externally, is of great service. 3. In cancerous affections it exerts remarkable calming effects, and in some cases even cures seem to have resulted from its employment, especially in the atrophied form of scirrhus. Its use is less satisfactory in soft and rapidly increasing tumours, but the progress of some of these has seemed to be retarded. In other cases, it has diminished the size of secondary tumours, rendering the primary ones more amenable to surgical operation. As a means of assuaging suffering, whether used topically or taken internally, it is invariably preferred by the patients to opium and all other narcotics.

M. Manec, surgeon to the Salpêtrière, has just obtained a recompense of 2000 francs from the Académie des Sciences (Gaz. Méd., 1853, No. 10,) for the perseverance he has shown in investigating the action of Frère Côme's Arsenical Paste in more than 150 cases of cancer, in some of which he obtained unhoped for results. His experience leads him to these conclusions:—1. That the arsenical paste penetrates the cancerous tissue by a sort of special action which is limited to it. This action is not simply escharotic, for beneath the superficial, blackish layer, which the caustic has immediately disorganized, the subjacent morbid tissue seems struck with death, though it may retain its proper texture, and almost its ordinary appearance. Later, the cancerous mass is separated by the eliminatory inflammation which is set up around its limits. The same paste, which extends its action more than six centimetres deep in a cancer of close texture, when applied to superficial gnawing ulcers, usually only destroys the morbid texture, however superficial this may be, and respects the sound parts. 2. The absorption of arsenic is proportionate to the extent of surface to which it is applied; and as long as this does not exceed a two-franc piece in size, there is no danger from this source. A large surface should only be attacked by successive applications. 3. Arsenic which is absorbed is chiefly eliminated by the kidneys, during a space of time of not less than five, and not more than eight days, as amply demonstrated by Pelouze. Thus, if we allow nine or ten days to intervene between successive applications, all danger from absorption may be avoided.

M. Gozzi (Bull. delle Sc. Med., xx. p. 231) strongly recommends the following caustic for the destruction of cancerous growths:—Corrosive subl., ℈j; caustic potass. 3 ss; arsenic and cerussa, aa, gr. vj.—to be made into a paste with starch and white of egg. While using this or other caustics, emollient poultices, ointments, &c., should be avoided, as diminishing their effects, unless the irritation

* In cases of Bright's disease, which we hold to be indubitably a blood-disease *ab initio*, the failure of treatment probably comes essentially of the existing inability to diagnosticate the affection, before its *local anatomical character in the kidney* has been developed. This anatomical character now absorbs attention; and to it, treatment is directed almost alone. It would be just as rational to aim at the cure of phthisis, small-pox, typhoid fever, or scurvy, by local applications to the pulmonary tubercles, the cutaneous pustules, the intestinal deposit with its ulcerative effects, or the cutaneous blotches and spongy gums, which severally constitute anatomical characters of those affections.

produced by their application has been excessive. M. Gozzi objects to the usual plan of destroying the tumour, layer by layer, from the apex to the base, the latter becoming very indurate after these repeated applications, and offers great obstacles to the approximation of surrounding granulations and their cicatrization. He prefers applying the caustic laterally, in the direction where the tumour seems most inclined to separate.

M. E. CAZENAVE (L'Union Médicale, ix.) speaks very highly of a caustic formed by pouring hydrated sulphuric acid on powdered saffron—*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 570.

9.—ON RHEUMATISM.

(From a Review of the work on this subject by DR. HENRY WILLIAM FULLER, Assistant Physician to St. George's Hospital.)

By DR. W. SENHOUSE KIRKES.

[In commencing the consideration of the subject, Dr. Fuller ascribes the real predisposing cause of rheumatic fever to some morbid condition of the blood, and believes that mere exposure to cold and damp is not sufficient to produce the disease. He says:]

If certain substances are introduced into the circulation, fever is set up, rigors often occur, and inflammatory symptoms very shortly supervene in various parts of the body: symptoms which vary in intensity and locality according to the amount and character of the poison. And if the blood be altered in character, it is practically the same, whether it contain matters foreign to the system, and altogether morbid in kind, or whether it contain an excess only of some material, a certain amount of which is compatible with health. In either case it is unhealthy and poisonous in its nature; in either case it contains a *materies morbi*, which may not only produce fever, or the symptoms of general derangement, but if irritating in its nature, may give rise to local inflammatory symptoms.

[Like Dr. Prout, Dr. Todd, and others, Dr. Fuller believes that lactic acid being retained in the blood instead of being eliminated by the skin, is the special materies morbi of the disease. Whether this be so or not, all agree in believing that it is generated within the system, and not absorbed from without. The development is called into play by any long continued depressing influence upon the system. When the system is thus deranged, and the]

Rheumatic poison is present in it, any disturbing circumstance, even of temporary duration, such as over-fatigue, anxiety, grief, or anger, by rendering the system more susceptible of its influence, may prove the accidental or exciting cause of the disease, and exposure to cold or to atmospheric vicissitudes is almost certain to induce an attack.

[Dr. Fuller considers that although the fibrous and fibro-serous textures are those which chiefly suffer, still from its being a blood disease, all parts of the body must be more or less liable to be affected. He then proceeds to discuss *the treatment* of rheumatism. Speaking of the different methods of treating the disease, he says,—]

But as, when uncomplicated by cardiac affection, the disease usually terminates sooner or later in recovery, and sometimes subsides with marvellous rapidity under every variety of remedy, it is obvious, that no sound inference can be drawn as to the success of any particular method of treatment, unless such treatment has been largely adopted, and has been attended with tolerably uniform results. And I am sure I may say, without fear of contradiction, that each and every plan of treatment which has been hitherto proposed is regarded by the profession as unsatisfactory. If in one person's hands any particular remedial course has proved efficient, it has signally failed in those of another: if at one time a remedy has proved efficacious, it has been found inert or injurious at another, under different circumstances of age, sex, constitution, and the like. Nor does this appear strange to those who consider the true nature of the disorder, and the variety of circumstances under which the physician may be called upon to minister to his patient's relief. The bleeding, which in the young, plethoric, and robust, may be necessary to allay

excessive vascular action and cause free secretion, may, in the weakly, induce irritability of the heart, and a consequent attack of cardiac inflammation. The opium, which in one person may prove of the greatest service in promoting free perspiration, and in allaying the general irritability of the system, may, in another, check the biliary and other secretions, and thus prevent the elimination of the rheumatic poison. The continued use of calomel, and the constant purging, which may be beneficial to one patient, by removing large quantities of unhealthy secretions, may unnecessarily exhaust the strength of another, and tend very greatly to impede recovery. And so in regard to every remedy which has been proposed: what is useful at one time, proves useless or positively injurious at another.

Of the value of alkalies and their salts generally, Dr. Fuller speaks in the warmest terms. To this favourable opinion of the value of alkaline remedies, the profession generally is beginning to yield assent, especially as the opinion gains ground, that rheumatism is dependent on a morbid, probably acidulous state of the blood; and that, in consequence, there is a preternatural tendency to the deposition of fibrine, which is counteracted by the free introduction of alkalies, by means of which the solubility of the fibrine is increased.

The general plan of treatment which Dr. Fuller advocates does not materially differ from that commonly practised, consisting principally of the free use of alkalies, combined with colchicum, calomel, and opium. Besides these internal measures, however, he employs, apparently with very marked advantage, the application of warm alkaline and opiate fomentations to alleviate the pain of articular inflammation. The solution he commonly uses for this purpose is composed of an ounce of carbonate of potash dissolved in a pint either of decoction of poppies, or of rose-water to which six drachms of Battley's solution is added; and he speaks most highly of its efficacy. "In every instance in which it has been employed, the relief obtained has been almost immediate, and the pain and inflammation have subsided rapidly."

[In considering the subject of rheumatic affection of the heart, Dr. Fuller expresses his disbelief in its arising from any metastasis from the joints. He considers it another mode of the manifestation of the blood disease, and an indication of an unusually severe form of the disease. In noticing the mode of the origin of the fibrinous concretions or warty vegetations upon the valves of the heart, he remarks:—]

Until recently, these warty growths have been almost universally ascribed to inflammatory exudation from the tissue of the affected valve; but latterly the opinion has been gaining ground, that they consist principally, if not exclusively, of fibrine deposited directly from the blood. This view, which is strongly maintained by Dr. Fuller, was brought very prominently before the profession, in 1850, by Mr. Simon, in his very excellent series of lectures on general pathology. Among the reasons which Mr. Simon there offers in support of this view are, first, the improbability of the lining membrane of the circulating apparatus becoming inflamed at all, since it contains no blood-vessels, and probably derives its nutriment from the stream of blood directly in contact with its inner surface. Yet, as observed by Dr. Ormerod, "this objection is more specious than real; for inflammation may be carried on by the same organic means as nutrition. And if, in any part, nutrition by unusual means effect an ordinary end, surely inflammation in the same part may do so likewise." And it may be further urged, that even although the opinion, that the lining membrane of the circulating system depends, both for its ordinary nutrition and its morbid changes, on the blood in contact with its interior, and not on that in the vasa vasorum, be admitted to apply to the membrane lining the blood vessels and general cavities of the heart, which seldom present evidences of disease, it can scarcely be supposed to hold good in the case of the valves; for both artificial injection and the vascularity induced by disease equally demonstrate the existence of a very free interstitial supply of blood to the textures both of the semilunar and auriculo-ventricular valves. And since it is on these parts that fibrinous deposits almost exclusively occur, and on which various unmistakeable evidences of inflammatory action, such as general vascularity, swelling, and occasionally ulceration, are observed, we should be cautious ere we entirely discard the opinion that fibrinous vegetations are, to some extent at least, dependent on inflammatory exudation, though probably increased by subse-

quent deposition from the blood. Against this inflammatory origin of these vegetations, there are, however, other very important objections, which Mr. Simon, in common with others, strongly urges: for example, the far greater frequency with which the left valves in comparison with the right are affected, and the very striking and almost constant fact, that the fibrinous deposits are observed only on that side of the valve in contact with the moving blood. If inflammation were the cause of the warty growths, the right valves might naturally be expected to be as much affected as the left, since both are supplied by the coronary arteries; and both sides of an affected valve should present the exudations in equal amount, or if there was any difference, the side next the moving blood ought perhaps to show a smaller amount, owing to the liability of the stream to wash the deposit from the surface as rapidly as it is formed. By referring the fibrinous growths to direct deposition from the blood, both of these facts are explained; the left valves being in contact with arterial and more highly fibrinized blood than the right, are more likely to become coated over with fibrine, while the surface directly opposed to the sanguineous stream is more likely to receive the deposit than the opposite one. The greater tendency of arterial than of venous blood to deposit fibrine when in motion, was repeatedly made the subject of direct experiment by Mr. Simon, who passed a thread through a main artery and contiguous main vein, leaving it for some hours to cut the stream: on removal, the portion of thread in the artery was invariably found coated with warty vegetations of fibrine similar to those on the valves of the heart, while that in the vein was never thus affected.

Against this weight of evidence in favour of the opinion that the vegetations so frequently found on the valves of the heart in connexion with articular rheumatism are the result rather of direct deposition of fibrine from the blood than of inflammatoryexudation from the tissue of the valve, must, however, be still opposed the fact already mentioned, that certain changes are sometimes observed, which can only be ascribed to an inflammatory process; as, for example, the soft, swollen, and vascular state of the tissue of the valve, but most especially to occasional ulceration. And since each of these, though sometimes observed to be unaccompanied by attendant fibrinous growths, are yet often found combined with them, the safest and perhaps the most correct view we ought at present to take of the vegetations in question is, that they may in some cases, at least, have a double source, being partly and primarily derived from inflammatory exudation, and subsequently enlarged by the deposition of fresh particles of fibrine from the blood flowing over the thus roughened surface, the tendency to such deposition being at the same time highly increased in consequence of the blood being unduly charged with fibrine, and, perhaps from the existence of some acid within it, less able than usual to retain the fibrine in solution. Whether the opinion be correct, that in some, and if so, in what proportion, of the cases, the fibrinous vegetations on the valves result exclusively from direct deposition of the fibrine of the blood, independently of any previous disease of the tissue of the valve, are questions which we are scarcely yet in a position to pronounce upon with certainty. Whatever view, however, he really held concerning the origin of the growths in question, there can be no doubt of the propriety of employing in the treatment of rheumatism those remedies which, such as the alkalies and neutral salts, especially those of potash, seem to possess the property of preventing the deposition of fibrine from the blood by increasing its solubility, and thus perhaps guard against any great increase of the vegetations, however they may have been formed in the first instance. Dr. Fuller briefly alludes to the possibility of the fibrinous deposits being occasionally detached from the valves; but he does not enter into the details which the admission of such a possibility almost necessarily entails. As this subject has been fully discussed by the writer of the present article, in the last volume of the "Medico-Chirurgical Transactions," it seems unnecessary to dwell upon it here.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 150.

10.—ON THE PATHOLOGY OF RHEUMATISM AND GOUT.

By Professor Bennett, Edinburgh.

The present theory with regard to these affections is, that they are both connected with an increase of lithic acid in the blood. In rheumatism, this is dependent on excess of the secondary, and in gout on excess of the primary, digestion. In rheumatism, however, there is considerable excretion of lactic acid by the skin (Todd), whilst in gout there is an excess of soda, which, uniting with the lithic acid, produces a compound of lithate of soda, that may be detected as such in the blood (Garrod), while sometimes it exudes into the cellular tissue of the skin, constituting tophaceous deposits. In both diseases there is an undue balance between the excess of lithic acid and the power of excretion,—in rheumatism by the skin, and in gout by the kidney. This pathology serves to explain the similitudes and differences existing between the two affections. In both there is a certain constitutional state, dependent on deranged digestion, during which exciting causes occasion local effects. These exciting causes in rheumatism are bad diet, hard work, exposure to cold and wet, and its subjects generally are the poor and labouring population. In gout the causes are good diet, indolence, repletion, or indigestion, and its subjects are for the most part the rich and sedentary. The local manifestations in both are acute wandering pains, with pain and swelling—in rheumatism of the large, and in gout of the small joints, constituting the acute attack in the one, and the so-called regular attack in the other. These are combined with a tendency to various complications of the internal viscera, which are more or less dangerous to life.

The general indications of treatment are, in both diseases, (1st) so to regulate the nutritive functions as to ensure a due balance between the amount of matters entering the blood as the result of digestion, primary or secondary, and the amount of matters discharged from the economy by the excretory organs. (2d.) To conduct the acute attack to a favourable termination, carefully watching the internal viscera and being prepared to act with vigour should these become affected. Hence the treatment of these diseases resolves itself into what may be called curative and preventive,—the first having reference to the acute attack, the second to the means most likely to hinder its return; the one must be carried out by remedies which act upon the blood and excretory organs, the other by the management of diet and exercise.

Treatment of Acute Rheumatism by Nitrate of Potash.—Although the general pathology above-mentioned, which considers rheumatism as a blood disease, may be considered on the whole as correct, we are not yet enabled to explain by it the symptoms of an acute attack of the disease, where, in addition to the constitutional disorder, we have local pain, occasional heat, redness and swelling, with febrile symptoms. Most practical men have attributed these phenomena to a superinduced inflammation, although it has not been shown that exudation occurs, or that it is followed by the usual results of that condition. Besides, its erratic character is opposed to what we know of the process of true inflammation, and calling it an unhealthy inflammation in no way clears up the mystery. The real pathology of acute rheumatism, therefore, has yet to be determined, and, as a preliminary step, a careful histological examination of the affected tissues is absolutely necessary. So far as I am aware, this has never yet been attempted, if we except some observations by Hasse on the structure of the bones in rheumatism (see the Monthly Journal for June, 1847).

Our treatment of this disease, therefore, is purely empirical, sometimes directed against the pain, at others against the supposed inflammation; now attempting to combat the pathological condition of the blood, then striving to remedy its effects by acting on the excretions, and not unfrequently giving specifics, in the hope that any change in the constitution, however produced, may be beneficial. In no disorder, probably, has such a crowd of opposite remedies and plans of treatment been extolled, and yet none of them can be depended on, so that it has been imagined that six weeks' rest is the most useful prescription (Warren). The latest author on Rheumatism endeavours to explain this by observing, that this need not be wondered at by "those who consider the true nature of the disorder, and the variety of circumstances under which the physician may be called upon to minister to his

patient's relief. The bleeding, which in the young, plethoric, and robust, may be necessary to allay excessive vascular action and cause free secretion, may, in the weakly, induce irritability of the heart, and a consequent attack of cardiac inflammation. The opium which in one person may prove of the greatest service in promoting free perspiration, and in allaying the general irritability of the system, may in another check the biliary and other secretions, and thus prevent the elimination of the rheumatic poison. The continued use of calomel, and the constant purging, which may be beneficial to one patient by removing large quantities of unhealthy secretions, may unnecessarily exhaust the strength of another, and tend very greatly to impede recovery. And so in regard to every remedy which has been proposed. What is useful at one time proves useless, or positively injurious, at another; and the conclusion is forced upon us, that what is wanted 'is far less the discovery of untried methods of treating disease than of discriminative canons for the proper use of those we possess';—far less the discovery of any new medicines, than the adaptation of our present remedies to the exigencies of each case." (Fuller on Rheumatism, p. 73.) These judicious observations may serve to explain the cause of our failure; but until we obtain more exact information regarding the *special* pathology of rheumatism, it is in vain to hope for a rational treatment.

For my own part, I generally treat rheumatism on what is called "general principles"; these are, to alleviate severe pain by anodynes, diminish excessive vascular action by moderate bleeding and saline antiphlogistics, and encourage every attempt at critical discharges by diaphoretics, diuretics, purgatives, &c. Occasionally I have tried the effects of special remedies in this disease, and watched a series of cases, all of which were treated in the same manner. Thus I have tried aconite, and believe that alone it is of little service; colchicum also I have given frequently, and am of opinion that in pure rheumatism it is of no advantage, although in gout it is invaluable. This session (1851-2) you have witnessed another trial of this kind with the nitrate of potash, a remedy formerly recommended by Dr. Brocklesby, and which has been given with good effect by M. Gendrin, in the wards of La Pitié, in Paris, as recorded by Dr. Henry Bennett (Lancet, 1844, vol. i., p. 374.) It has more lately been pressed on our attention by Dr. Basham (Medico-Chir. Trans., vol. xxxii.,) who tells us that from one to three ounces of the salt, if freely diluted in water, may be taken by the patient in the course of twenty-four hours, without any injurious results, but with the effect of relieving in a marked manner the swelling, heat, and pain in the joints.—*Monthly Journal of Med. Science, Dec.*, 1852, *p.* 566.

11.—*Cases of Rheumatism treated by Lemon-Juice.* From the Clinical Reports of PROFESSOR BENNETT.—*Case* 1.—Abigail Rankin, a servant, æt. 39, admitted 15th December, 1852. Had rigors on the 7th, followed by febrile symptoms and acute pain in all the joints. On admission, pulse 100, full and strong; heart sounds normal; considerable febrile symptoms; acute pains and swelling in all the joints increased on motion; much sweating at night. Other functions healthy. Habeat succ. limonis, ℥ ij. ter in die. On the 17th, she was ordered ℈j. of Dover's powder. December 20th. The pains have continued as acute as ever till to-day, though she has taken ℥ vj. of lemon-juice daily. At present she can move the joints slightly without so much suffering. Habeat ℥ iij. succ. limonis, ter in die. December 22nd. There was great sweating last night, and to-day is much better. Habeat ℥ j. succ. limonis ter in die. Some swelling of the left wrist joint remained until the 23rd, on which day all pain had left her. Dismissed well January 6th, 1853.

Case 2.—Catherine Rooke, æt. 21, married, admitted December 23rd, 1852. Had rigors on the 14th, followed by febrile symptoms, and excessive pain, at first, in the knees and ankles, but subsequently in every joint of the body. On admission, pulse 84, of moderate strength; heart's sounds and impulse normal; the joints are more or less swollen, painful on pressure and on motion; skin bathed with perspiration; febrile symptoms with the exception of increased pulse well marked; a considerable deposit of lithates in the urine. Other symptoms normal.

℞. Pulv. Dover, gr. x. statim sumend. ℞. Sol. mur. morph. 3ss.; potassæ bitart. 3ss.; sp. æther nit. 3j.; aquæ, ℥j. Ft. haust. hora somni sumendus. On the 25th, purgatives of calomel and jalap were ordered. December 26th. The pain and swelling of the joints have somewhat diminished, but are still very acute. Habeat succ. limon. ℥j. ter in die. January 2, 1853. The pains have slowly subsided since last report, but there is still considerable soreness and stiffness of the knees. The arthritic swellings have everywhere disappeared. January 4th. Acute pain has returned in the right arm, which she cannot move. January 5th. Acute pain has extended to the right arm and back. Omittantur succ. limonis. ℞. Potassæ nitratis ℥ss.; aquæ ℥jv.; M. sumat ℥j. ex aquæ, ℥iv. ter in die. January 6th. Pains now disappeared; marked improvement. No critical discharge. Dismissed well January 7th.

Case 3.—Thomas Aitken, æt. 30, blacksmith, admitted December 25th, 1852. Fourteen days ago, after exposure to cold, was attacked by rigors, followed by febrile symptoms and pain in his joints, which have continued up to this date. On admission, pulse 74, rather weak. A blowing murmur, with the faint sound loudest at the apex, which, it seems, resulted from a previous attack twelve months ago. Slight swelling only in his right hand and wrist, but there is pain in all the joints, more or less, of an erratic character. Febrile symptoms very slight. Slight bronchitis. Habeat succ. limonis, ℥ss. ter in die. On the 28th, the dose of lemon-juice was increased to ℥j. On January 2d, he was much better; but on the 4th the pains returned, but not so violently. On the 12th, he was free from pain, having had some diarrhœa, and taken two ℈j. doses of Dover's powder. On the 22d, the pains returned, but again subsiding on the 24th, he was dismissed.

Case 4.—James Ollason, æt. 20, clerk, admitted January 4th, 1853, with organic disease of the heart of old standing, and chronic rheumatism of an erratic character, sometimes violently attacking one joint and sometimes another, accompanied with swelling and tenderness. Lemon-juice in ℥j. doses was tried three times a day, for four days; but being evidently of little benefit, was then abandoned for opiates and sedatives.

Commentary.—In no one of these four cases in which lemon-juice was given, although in two six ounces, and in one nine ounces were taken daily, did it appear to me that the disease was in any way controlled or alleviated by the remedy. In Case 1, six ounces were taken daily without any effects, and then the quantity was increased to nine ounces daily, until the 21st day of the disease, when sweating and resolution of the symptoms followed, more from natural crisis, perhaps, than from the effects of the juice. In Case 2, the remedy was continued for two days, and until the 21st day of the disorder was fairly passed. Then nitrate of potash was given with the immediate effects of relieving the symptoms—although here also it is not improbable that a natural crisis of the disease was then established. In any case the inefficacy of the lemon-juice appeared manifest. Cases 3 and 4 were cases of sub-acute and erratic rheumatism, which also resisted the lemon-juice; the first for a month, the second for four days. On the whole, this trial of the remedy was in no way favourable, and is strongly contrasted with the good effects of nitrate of potash, which I formerly brought forward.—*Monthly Jour. of Med. Science, April* 1853, *p.* 352.

12.—*Infusion of the Leaves of the Ash-tree* (*Fraxinus Polygamie*) *in the Treatment of Gout and Rheumatism.* By Drs. Pouget and Peyraud.—The most useful acquisitions in materia medica are due generally to chance, or, rather, to a protective Providence over human health; *e.g.*, the antiperiodic properties of cinchona.

In 1842, Dr. Peyraud experienced his first attack of gout, for which he employed the usual remedies. The attack lasted twenty-five days. During the three following years the disease increased both in frequency and violence, and the patient went through the several forms of treatment without finding relief. He heard by accident that the infusion of the ash-leaves had long been considered a specific in the department of Dordogne, and that the peasantry of the district used it to "chase away their pains." Dr. Peyraud found it upon trial so useful that he had but one gout from 1845 to 1849.

M. B., a merchant of Bordeaux, was seized with an attack of gout, for the first

time, in the right foot. He was ordered infusion of ash-leaves; upon the second day he was able to come down stairs, and to leave his house. Ever since he has had recourse to the same remedy with good effect upon experiencing premonitory symptoms, such as head-ache, loss of appetite, &c. The same success followed its administration in cases of acute articular rheumatism. A house-painter, aged 28, had upon several occasions suffered from acute articular rheumatism, accompanied by endocarditis, which prevented his following his occupation for four months or more. December 25, 1849, he had pain in the articulations of the feet, knees, and wrists, with swelling, accompanied by difficulty of respiration and inability to lie down. December 30, he was so weak, that it was thought better before bleeding him, to try the infusion of ash-leaves. In about twelve hours, and after the third dose, the patient was able to breathe easier, and there were fewer præcordial pains. On the fourth day, the articular pains had diminished in intensity, the respiration was freer, and the appetite had returned. Jan. 22. He was able to resume work. The authors now administer it in the form of a fine powder in preference to the infusion. Other cases are related in the Essay.—*L'Union Médicale, Nov.* 1852; *Med. Times and Gazette, Dec.* 25, 1852, *p.* 650.

13.—*On the Employment of Fomentations of Digitalis in the Treatment of Certain Forms of Ascites.* By Dr. Raymond Falot.—The internal use of digitalis in powder is not always free from inconvenience; a local action more or less irritant, abundant alvine evacuations, accompanied with colic, can contra-indicate it in the treatment of certain serous effusions, especially in the intermediate form between simple exhalation of serosity and subacute peritoneal inflammation. According to M. Andral, the decoction of digitalis, applied as a fomentation, is a powerful diuretic, which can be substituted for the internal administration whenever the patient is suffering from gastro-intestinal irritation, a common complication with ascites. Bayle, Trousseau, and Pidoux recommend also the topical use of the remedy.

Justine B., aged 18, who had menstruated since 13, and enjoyed good health till 18, when she was attacked with necrosis of a superficial part of the lower jaw, caught cold from being exposed to wet in the country. The day following, she suffered from a severe attack of erysipelas of the face. Subsequently there ensued amenorrhœa, progressive emaciation, swelling of the abdomen, and diminished urinary secretion. The abdomen measured thirty-seven inches round the umbilicus; there was evident fluctuation. Heart's sounds natural. The operation of paracentesis was successfully performed, and she recovered so as to pursue her usual avocations.

She again exposed herself to cold and wet, when a second attack of ascites came on, and the urine was albuminous. Fomentations of digitalis, combined with moderate pressure, removed the effusion into the peritoneum in about one month. She is now recovered, except that she experiences a slight dragging feeling in the abdomen, if she does not incline the trunk forwards in walking.—*Med. Times and Gazette, March* 12, 1853, *p.* 277.

DISEASES OF THE NERVOUS SYSTEM.

14.—ON SOME OF THE DIFFERENT FORMS OF LOCAL HYSTERIA RESEMBLING NEURALGIA.

By Dr. Robert B. Todd, F.R.S., &c.

[Dr. Todd presents us with the two following interesting cases of this disease. The first occurred in a woman named Harriet B., aged 30, admitted May 7, 1851. For the notes of this case we are indebted to Mr. T. Bridgewater.]

The point of greatest interest about the case is, that she suffered acute pain in the right hypogastric region of the abdomen; the pain was of so acute a nature that she could not bear the slightest pressure on the affected part; even the weight

of the bed clothes was painful to her. This pain was her main complaint, and it was for the relief of this she has been admitted to the hospital. It would be impossible to find an instance of a more strictly localised pain than that afforded by this case, nor could I bring before you a more striking example in which relief from pain was more peremptorily demanded from the physician as the one thing complained of by the patient. Cases of this kind you will often meet with hereafter in your practice, and you will do well to note carefully such as may come before you now, and the treatment which may appear to be serviceable, for nothing contributes to professional success more than the power of readily appreciating the nature and causes of pain, and tact in applying suitable and efficacious remedies.

Severe abdominal pain, whether general or limited to a spot, is at once suggestive, both to practitioner and patient, of inflammation within the abdomen; it may be, of peritonitis. This latter malady is, as you know, a severe one, and, in the majority of cases, fatal. How important, then, is it to be able to determine whether such pain is due to a cause of this kind or to some other!

The pain under which this woman suffers is referred to the right hypogastric region, over the position of the right ovary, and the painful part occupies a circular space of about two and a half or three inches in diameter. There is extreme tenderness to the touch; even when the integuments are pinched up with the utmost gentleness, and with every care to avoid compression of the subjacent parts, she shrinks and appears to suffer great pain. Deep pressure on the corresponding region of the left side causes pain likewise, as if by implicating the right side.

There is another very important feature in the case which deserves especial notice; it is this, that when her attention is much engaged, she certainly suffers less, although she cannot be said to be free from pain. Upon making a careful examination of the part, we could detect no tumour; and, upon pressing deeply, no abnormal condition of the ovary could be discovered; and although there was pain, there was no increase of it to a proportionate extent.

[It is to be observed in this case that the pain was nearly as great under slight as under deep and heavy pressure. Such a pain might arise from irritation in the neighbourhood of the commencement of the colon, from peritonitis, from inflammation of the ovary, or from any inflammation of the abdominal muscles; but opposite reasons were too powerful to allow of such being the case.]

Lastly, the symptoms might be referrible to that peculiar state of the nerves, superficial as well as deep, which gives rise to that kind of pain which conventionally, (and, in the present state of our knowledge, conveniently enough) we call "hysterical pain." This pain, also called a nervous pain, is no doubt just as acute and severe to the patient's feelings as any pain from injury or organic lesion, although, in the parts in which it is seated, we can discover no alteration of structure whatever.

You see that we have excluded from the diagnosis peritonitis, enteritis, and inflammation of the ovary. Let us now inquire how far the hypothesis of the pain being hysterical is borne out by the accompanying phenomena.

The great tenderness of the skin to the slightest touch is very favourable to this view, which is likewise supported by the fact of the little difference in the intensity of the pain under deep and under superficial pressure.

The slightest touch to any other part of the body makes the patient suddenly shrink back with a greater or less expression of pain,—a character which belongs to all these hysterical affections. Often when you bring the finger close to the skin, there is an expression of pain nearly as great as if you had actually touched it.

Certain features in the general constitution of the patient confirm this view; she is evidently of an hysterical constitution, and exhibits that peculiar appearance of countenance which I have often pointed out to you by the name of "facies hysterica," characterised by a remarkable depth and prominent fulness, with more or less thickness of the upper lip. There is also a fulness and obviously drooping condition of the upper eyelids. This drooping conformation of eyelids is at once a mark of beauty, and of that from which many beautiful women suffer very much, namely, the hysterical state of constitution.

She also exhibits that irritable state of spine under which hysterical patients are apt to suffer. The least pressure on a spinous process causes her to shrink, and

to complain of a pain shooting forwards from the point pressed on; and, as is so often the case with patients of this temperament, she complains of pain from pressure, in whatever part of the body it may be applied; whenever she is touched, whether the finger comes in contact with her arms or back, or any other part of the body, she exhibits an undue degree of sensibility, and shrinks.

Then there is yet another point about the case which I have not mentioned. We find, on referring to the history, that the patient never menstruated regularly. In the vast majority of cases of hysterical affections you will find something wrong about the uterine functions; and although I am not prepared to lay it down positively, that the disease (as its name implies) depends solely upon this disturbance, you will find in the many forms of hysterical affections that may be brought under your notice, that it will rarely happen that there is not some deviation from the healthy action of the uterus exhibited in the disturbance of the menstrual function. A large proportion of hysterical patients suffer from leucorrhœa; in others, the catamenia are insufficient in quantity, or occur at irregular intervals. Sometimes the menstrual secretion recurs at short intervals, and is very profuse, so that we have that condition to which the term "menorrhagia" has been applied. Perhaps there is an irritable condition of the uterus, causing almost constant pain and tenderness in the uterine region. No one of these conditions is constantly observed, but in almost every case of hysteria there is some form or forms of uterine disturbance.

Then, then, we arrive at the conclusion, that the symptoms in Harriet B——'s case are to be referred to an hysterical state of constitution. The case is a good example of one form of local hysteria, to some of the other forms of which I shall briefly call your attention.

Of all these conditions, that which has been called "irritable uterus" is by far the most formidable. It is characterised by exquisite pain and tenderness in the region of the uterus,—even the slightest pressure over the organ, or the least touch applied to it in the examination per vaginam, causes great suffering, and the patient shrinks in consequence. At the same time there is no enlargement or other organic change in the organ.

Another form of local hysteria, is a pain of very frequent occurrence under either breast, and, what is rather curious, more commonly found under the left than under the right breast. Leucorrhœa is so often concomitant with this pain, that whenever I find a patient complaining of it I invariably ask if she suffers from leucorrhœa; or conversely, if leucorrhœa be present in any quantity and for any time, I am led to inquire about the local pain. That there is a connexion between the leucorrhœa and the pain in the side scarcely admits of a doubt, for the pain is more severe if the leucorrhœa be profuse, and it very commonly happens, that as soon as the healthy condition of the uterine functions has been restored, the pain will disappear. My theory of the production of the pain is this:—I believe that in cases of this kind there is not only an irritated state of uterus, but also of one or both ovaries, and the pain is more immediately associated with the irritable ovary, the nerves of which, implanted, as many of them are, in the spinal cord, reflect the irritated state on to the nerves of the submammary region. It is an interesting example of a reflected sensation.

A third form of local hysteria is one with which you should be familiar, and be able readily to diagnose. It manifests itself in that pain in the stomach which is commonly called "gastrodynia," which we must be very careful to distinguish from the pain resulting from ulcer of the stomach, as an essentially different treatment would be obviously applicable to each. One form of ulcer of the stomach very often occurs in young chlorotic women, amongst whom also we most frequently meet with the gastrodynia; hence the importance of paying close attention to the symptoms, which will enable us to distinguish with certainty the one from the other. An important difference is, that in the hysterial affection, the pain may occur at any or at all times, whether the stomach be empty or full; nor is there any constant relation between its development and the ingestion of any particular kind of food. On the other hand, the pain from ulcer of the stomach is distinctly influenced by the taking of food, but especially of that kind which it is the province of the stomach to digest. Patients with ulcer will

tell you, that as long as they abstain from food, they have little or no pain; but as soon as they eat anything they begin to suffer, and they are not easy until digestion has been completed. Hysterical patients, on the other hand, will tell you, that the pain comes on as soon as they rise in the morning, and continues perhaps all day. You will also find that that these patients exhibit more or less of the hysterical constitution. With reference to the diagnosis between these two kinds of stomach pain, you should always inquire if there has been vomiting of blood, as this forms a most important symptom in the history of ulcer of the stomach. Or, if there have been no vomiting of blood, you should inquire whether it may not have passed through the pylorus into the intestinal canal, in which case you will find, upon inquiry, that the patient has passed very dark matter from the bowels; the stools, in fact, exhibit a pitchy character in those cases in which blood from the stomach passes by the bowel. The effects of the treatment to which the patient is subjected will also often enable you to distinguish the true ulcer of the stomach. Beer and stimulants, and all acid drinks, greatly aggravate the pain from ulcer, while they often tend to relieve the hysterical affection. Bismuth acts very favourably in the one, but not so in the other.

Another form in which we find local hysteria manifesting itself is exhibited in that condition called hysterical spine. You have a good example of it in the patient whose case has led to these remarks. If you pass your finger down the spine you will find some places very irritable; perhaps the painful situation may be confined to one particular spot, or it may extend over three or four spinous processes, or the whole spine may be affected. Whichever be the case, you will find that the patient suddenly shrinks as soon as the irritable part is touched, and appears to suffer, and no doubt does suffer, exquisite pain. Now, this condition has been over and over again mistaken by careless practitioners for caries of one or more of the vertebræ; and in consequence the unhappy patients have suffered from all the artillery of physic; leeches, blisters, and setons have been applied to the spine, and other antiphlogistic measures have been resorted to, but without any effect beyond, perhaps, aggravation of the pain. The most important point, by means of which you may distinguish vertebral caries from the hysterical affection, is this: in the vertebral disease the pain is not so excessive, and is always fixed in one part, and it will be found to increase gradually as the disease advances.

Hysteria likewise affects joints. A patient has a pain in her knee or her hip, or some other joint. I have no doubt that in these cases there is not only an affection of the sentient but of the muscular nerves likewise; for the muscles are either spasmodically affected, or relaxed, or paralysed, occasioning difficulty and awkwardness in the movements of the joint.

Many instances of what are called neuralgic pains are referrible to the hysterical state, and the case of Harriet B. is one of them. But you must take care to distinguish the true neuralgic from the hysterical affection. They are different diseases, although probably nearly allied. In the true neuralgia there is an altered nutrition of the affected nerve as decided as that of the tissues of a joint affected with a transient attack of gout. Such, however, is probably not the case in hysteria.

Our patient, Harriet B., has continued in the hospital for a considerable time. Repeated examinations tended only to confirm the diagnosis I have given, and she has had two or three hysterical fits. On her admission she was treated for the diarrhœa under which she was then suffering. The diarrhœa ceased, but the pain remained unabated.

Since that time the treatment has been chiefly such as would check leucorrhœa, improve tone, and promote general health. The tepid shower-bath, the cold hip-bath, mild aperients with galbanum, and the citrate of iron, were administered for some time. The result was a very marked improvement of the general health.

Notwithstanding this treatment, the pain in the hypogastrium continued troublesome, although diminished in severity. Local treatment was employed; leeches, blisters, and opiate applications were applied, without good effect. At length, fearing that these applications tended rather to aggravate the pain by fixing her attention upon the affected part, which undoubtedly they are apt to do, I applied a blister to the corresponding spot on the left side, and kept it discharging for some time. This treatment was attended with the happiest result; the pain left the

right side, but, as if in illustration of its true nature, she now complains of a pain in the left or blistered side, less severe, however, than the original pain. But from the great improvement in her general health, and the abatement which has already taken place in her symptoms, there can be no doubt that time is now the most important element in her cure.

[The second case was a most extraordinary one of its kind. This was in a woman, Amelia D., aged 38. The following graphic description is from the notes of Dr. Hyde Salter, the house-physician of King's College Hospital.]

"On June 5th, about ten o'clock in the evening, (Dr. Salter states,) I was called to see a patient who had just been brought into the hospital by a policeman, who had found her speechless in the streets. I found a woman sitting in a chair, looking quite intelligent and coherent, although evidently in great excitement and distress; her expression was anxious, and she looked from one to the other in an inquiring and imploring manner; her teeth were fast clenched, and her lips parted. On being asked who she was, she shook her head; when asked what was the matter with her, she pointed to her mouth and masseter muscles; when asked if her jaws were locked, she nodded her head. I then tried with all my force to separate them, but could not; then I felt her cheeks over the masseters, and found these muscles contracted into hard knots, which sufficiently explained the closure of the jaws. When questioned as to the cause of the tetanus, she clenched her fist and struck her left cheek, implying that she had had a blow there. I said, "Have you had a blow there?" She nodded her head. We asked her if she could write. She shook her head, and clasped her hands in a despairing way. We then asked her if her husband had given her the blow. She nodded assent eagerly.

"By degrees, putting all sorts of questions, and getting nods or shakes of the head, as the case might be, I learned that she lived in the neighbourhood of London, that she had been struck there by her husband that day at two o'clock, and that the blow was the cause of the attack; also that she was 38 years of age. All these things afterwards proved to be true. While answering our questions as well as she could, she suddenly, and without any warning, slid from her chair in a state of apparently complete insensibility, and would have fallen on the floor had she not been supported. Then commenced a series of spasms more strange and horrible than can be conceived or described, tetanic and clonic, partial and complete, symmetrical and irregular, varied in every conceivable and inconceivable way. First she had opisthotonos, then she was thrown forwards, then she twisted round and writhed like an eel, then she would throw herself forward and raise herself into a sitting posture, then she would roll over and over, then a slow undulation or wave of spasm would pass over her from head to foot, producing different movements of her limbs as it passed down, like a dog dying of hydrocyanic acid poisoning."

You might almost be led to think that this description is overdrawn, but I can myself bear testimony to the accurate statements of the facts, as I was present during the greater part of the time. Then, continues Dr. Salter, "the tonic spasm would suddenly become clonic, and she would throw out her arms and draw them back with great force. The legs would be affected in a similar way, or drawn up to the body, so that the heels were close to the buttocks, or thrust stiffly out. When holding her hand she would suddenly clutch mine with such force that I could not disengage it. Meanwhile, her face was undergoing all sorts of contortions, at one time expressing rage, at another intense fear, then a sneer, then a fixed and rigid stare; the eyes might be rolled upwards or downwards; the pupils dilated, and insensible to light; then the elevators of the upper lip and ala of the nose would jerk, perhaps on one side or both, exposing the teeth. The depressor anguli oris would draw one corner of the mouth down on the chin, or the platysma throw the skin into a state of rigidity;" but, as Dr. Salter remarks, it is quite impossible by description to convey any accurate idea of the extraordinary contortions of the patient.

One of the most remarkable features in the case was the rigid tonic condition of the whole muscular system. Every muscle employed in any movement became at the same time as hard as a board, and the movement was not so much executed with rapidity as with great force and even slowness. But in watching her attentively, it was plain that the movements, varied and irregular as they were, did not

partake strictly of the character of involuntary movements. They were evidently influenced by a will, but by a diseased and ill-directed will. While these spastic movements of the muscles continued, there appeared to be complete insensibility to surrounding objects; but when they ceased, her intellect seemed quickly to recover itself, and she could talk freely and collectedly. At this time she gave us her history, which we afterwards ascertained to be correct. In the midst of her narrative, her eyes suddenly became fixed, and she stared at us for a short time and fell off into another paroxysm, and went through the same series of varied movements and contortions as before. She continued in this state, alternately in fits and quiet, for nearly two hours, and then slept.

Now, on being called to a case of this kind, you would have, on the spot, to decide upon its real nature, without the help of any history on which full reliance could be placed. Such was our case when we first saw this patient; and, therefore, before I give you any further details of the case, I shall state to you the conclusion arrived at by Dr. Salter and myself, and the grounds of our decision. We had to distinguish these extraordinary muscular movements from the state of trismus, of tetanus, and from epilepsy.

The distinction from trismus was sufficiently easy. The fact of her coming to herself so soon, and the subsidence of the spasmodic action of the muscles, was quite sufficient to enable us to diagnose that the condition was not trismus, and the absence in the history of all those causes which ordinarily give rise to this affection also tended to the same conclusion. In the same way that we were enabled to say that we were not dealing with a case of trismus, we also came to the conclusion that the case was not one of tetanus. Trismus and tetanus are but degrees of the same affection. In both diseases the muscular movements are distinctly involuntary, and often excited by the application of some stimulus to the surface. In this case, however, the movements bore a decided resemblance to the voluntary class, and could not be excited at the will of the observer.

At first sight, the affection bore a greater resemblance to epilepsy than to any of the other forms of convulsive disease; but there were certain distinctive features, which enabled us very positively to decide that it was not epilepsy. There were the nature of the movements, and the affection of the consciousness. The movements partook more of the tonic than of the chronic character; and although at times very much varied, they were combined and regular, and, as it were, directed to an end and by a purpose, rather than irregular, rapid, and, as it were, explosive, as is the case with the convulsions of epilepsy.

The most important feature was the state of the consciousness, and by this chiefly we were enabled to decide against the epileptic nature of the case.

In epilepsy, complete coma, with total loss of consciousness, forms an essential and specific character. Convulsions form no necessary part of the epileptic paroxysm. There may be in epilepsy a complete absence of convulsions, but the insensibility is invariably present. Thus, we often meet with instances in which there is sudden and even momentary loss of consciousness, without any convulsion whatever. Such cases are not less truly examples of the epileptic paroxysm, than if the most violent convulsions were also present. Attacks of this non-convulsive kind constitute what the French call *petit mal:* but, in many instances, it is rather the *grand mal*, for the brain and the intellectual powers suffer much more after repeated attacks of this nature than after fits in which the convulsive movements formed the prominent feature of the disease.

In the case before us, however, we had no complete loss of consciousness; there was, undoubtedly, an affection of consciousness, that in which a person may be insensible to all ordinary external stimuli, and quite without any perception of anything going on around her, but at the same time she was aware of the altered state of her mental powers. But in epilepsy the patient knows nothing of his mental state during the paroxysm—he is only conscious of his state before and after it—and the period of the fit is to him as if it had never existed.

The nature of the movements showed that consciousness was not wholly in abeyance, they exhibited a co-ordination and a regularity which we never observe where there is complete loss of consciousness. She bent her fingers in a steady, regular manner, as if the muscles were obeying the mandates of her will, and her body was contorted by a combined movement, forming a striking contrast with the

jerking movements which we see in a state of insensibility. I say, then, that in this and in other cases of a similar nature we have no complete loss of consciousness; the apparent insensibility depends upon an intense concentration of the attention on one particular object. I may illustrate what I mean in this way. We all know that when the mind is very much interested and occupied with any particular subject or train of thought, one is very apt to take no notice of occurrences which are taking place close to, or in immediate connexion with one's person; one is frequently unconscious of noises, nay, we may even suffer a moderately severe pinch without being sufficiently roused from our reverie to enable us to direct our attention to any but the one object with which we are engaged; in fact the mind is fixed on one object to the complete exclusion of everything else for the time.

The state of consciousness into which patients of this class fall is of this kind, although very different in degree. What is commonly called "absence of mind" is an analogous affection of consciousness. Attacks of this kind are generally brought on by some powerful mental emotion—grief, anger, jealousy—which overwhelms and suspends all other intellectual operations while its influence lasts.

Then if the disease were not trismus, nor tetanus, nor epilepsy, what was it? All the symptoms and the history of the case combine to show that it was an example of a highly developed hysterical paroxysm or fit, or, more exactly, of that peculiar form of aggravated hysteria, which is called *catalepsy*.

The history of the case, which has been collected and recorded by my clinical clerk, Mr. Maurice Davies, shows that our patient was a highly excitable hysterical person, who has been subjected to moral, and perhaps physical influences also, well calculated to keep up that state. She tells us that she enjoyed good health until she reached the age of ten, when she experienced a sudden fright, and fell, in a fit, two stories down a well staircase; from that time to the time of her marriage (at the age of 15) she had the fits uninterruptedly, generally twice a week, and sometimes oftener. Since her marriage she has had the fits less frequently, but has never been entirely free from them.

It is difficult to determine what was the precise nature of these fits, whether they were epileptic or hysterical. Her age was more favourable to the former; but the subsequent history, and the fact elicited from her, that she was advised to marry in order to get rid of the fits, rather indicate that they were of the hysterical kind. At the same time, it is very unusual for a girl of ten years old to exhibit any symptoms of hysteria. We rarely find any manifestation of the hysterical condition until after the appearance of the catamenia. She was persuaded to marry at the age of fifteen, and, as she had no great affection for her husband, domestic squabbles occurred very soon after their union, and in some of these disagreements her husband used violence, and in consequence she had a return of the fits. At last they agreed to separate, but circumstances obliged them to have occasional interviews, and of necessity scenes of violence were repeated on each occasion. It was at one of these rencontres that the present attack commenced. The influence of moral causes in inducing the attacks is very manifest in this history. Ever since fifteen years of age, she stated that the slightest excitement would bring on a paroxysm. She is evidently a woman of strong passions and violent temper, and possibly her partner was as much "sinned against as sinning." She exhibited features of the same hysterical cast as in the case of Harriet B., with which I commenced the lecture, and many of the same peculiarities of the hysterical constitution.

There is a curious family history in this case. Her paternal grandfather and paternal uncle had fits, and she was the mother of nine children, eight of whom died, seven of them in convulsions!

And now let me refer briefly to *treatment*. I would just remark here that the same general principles of treatment are applicable whether the affection be chiefly manifested in a particular part of the body, as in the case of Harriet B., or whether it affects the system generally, as in the case of Amelia D.

Before, however, we discuss the treatment, we must endeavour to form some notion of the nature of hysteria. What is this hysterical condition? To answer this question properly would, I fear, occupy me too long, but I may tell you what it is not, by which you may be guided in your practice, and be enabled to meet the disease by the proper treatment. Now, in the first place, hysteria does not result from inflammation. It is not a disease of an inflammatory type, and no part of the

system whatever is in a state of inflammation. Hysteria, no doubt, occurs chiefly in persons who have a peculiar character of nervous system; very often inherited from nervous or gouty parents. It depends partly upon this original conformation of nervous system, and partly upon a depraved state of general nutrition affecting the whole system, and accompanied by a morbid state of the blood. It is always very much influenced by a disordered condition of some of the great emunctories of the body. Hence we must take care that the powers of the patient are not in any way diminished by the treatment to which she is subjected, or by the occurrence of any fluxes from any part of the body which may tend to lower her strength. We must also be careful not to overlook any derangement of the digestive organs; we must uphold the strength, and endeavour to improve the patient's health in every way that comes within her powers of digestion.

When you meet with a case like the present, in which a violent paroxysm occurs, what are you to do? Are you to look on and do nothing? The friends will anxiously inquire if nothing can be done to relieve the patient. I confess that I cannot tell you of any means which will cut short the paroxysm, but at the same time you may try certain means to alleviate it. Rousing the patient is often of use—shaking her, or throwing cold water in her face, or well splashing her with water is of more use. After she has come to, you should get the bowels to act freely. Means of this kind were freely used in the case of Amelia D., and an enema containing half an ounce of spirits of turpentine and an ounce of tincture of assafœtida was administered. She took likewise for a short time, twenty minims of the fetid spirit of ammonia, and ten minims of tincture of hyoscyamus in camphor mixture every third hour.

If the patient has been indulging too freely in spirit (as is often the case with persons brought into the hospital) the stomach-pump will be of great service. It rarely happens that taking blood or other antiphlogistic treatment can be called for.

The patient, Amelia D., recovered in three or four hours from her fits, and slept the rest of the night. Next morning she was perfectly tranquil, and could not be prevailed on to remain in the hospital.—*Med. Times and Gazette, Jan.* 1, 1853, p. 1.

15.—ON THE PATHOLOGY OF AFFECTIONS ALLIED TO EPILEPSY.

By Dr. C. B. Radcliffe.

[In a paper published [in 'The Lancet,'] Oct. 30, 1852, Dr. Radcliffe endeavoured to show that epilepsy was due rather to deficiency than excess of stimulation supplied to the muscles; and he now proposes to show that other allied disorders proceed from the same cause. He first makes a few remarks upon such as are of a chronic character.]

All muscular disorders admit of being divided into three categories—the tremulous, the convulsive, and the spasmodic; and this division forms the groundwork of the subsequent remarks.

1. In ordinary tremulousness, the temperament or predisposition is obviously distinguished by delicacy; it is the feminine, in contradistinction to the masculine habit of body. In palsy, the shaking goes hand in hand with unequivocal marks of decrepitude and decay—the listless wish, the snowy head, the fireless countenance, the wasted limb, the feeble pulse. In chorea, and in very bad tremulousness, the general condition is very similar. This affection is almost peculiar to females, and to females whose parents were infirm or aged, or who themselves had become enfeebled by improper or injudicious habits. It often originates during some severe and exhausting disease, or in the period of convalescence, and is always attended by signs of debility. In old cases these signs are very decided; the muscles are soft and pale, so as to bear some resemblance to the muscles of white-fleshed animals; they are also easily tired and tardily repaired. The face, lips, and tongue are pale; and not unfrequently the atony of the circulation is further indicated by pastiness of the skin, effusion in the serous cavities, rheumatic deposits, and other indications of a watery and depraved blood. In mercurial trembling the general state is intimately akin to that of general palsy or aggravated chorea;

and in bad cases every faculty of the body and mind is completely shattered. In ague, the general strength is much impaired, and this impairment is in proportion to the severity and frequency of the paroxysms.

2. The hysteric convulsion is connected by its name with women, and by facts with women who are more than usually delicate, or with men who are in the same predicament. The convulsion of teething is equally connected with delicacy, for it is certainly true that this symptom manifests itself in weakly rather than in strong children, and in weakly children almost in proportion to their weakliness.

3. The state of system in chronic spasmodic affections is virtually the same. The liability to cramp is always associated with tremulousness. It increases with the advances of age, and is almost permanent, when occasional tremors are prolonged into palsied tremors. The cramps of lead-poisoning are connected with a remarkable degree of wasting and atrophy, particularly in the muscles. The subjects of catalepsy, in like manner, are much more delicate and impressible than they ought to be. Their skin is usually pale or dingy, their pulse readily disturbed, their general appearance either hysterical or apathetic. A cataleptic boy, lately under my care, (the particulars of whose case were reported in 'The Lancet' at the time,) was as irritable, uncertain, and fretful as an infant. His apprehension was slow, his memory weak, his head large, his eyes staring, his pupils dilated and sluggish, his complexion sallow and venous, his hand cold and clammy, his pulse slow and feeble.

As with epilepsy, therefore, so with these forms of chronic muscular derangement, the conclusion is, that the disorder is manifested in a state of general weakness and atony, and not in one of health and vigour.

In order to arrive at the knowledge of the real nature of the several affections allied to epilepsy, we now proceed to examine the condition of the vascular, nervous, and muscular systems in, and the nature of the causes operating upon, these affections.

What, then, is the condition of the *vascular system?*

1. In ordinary tremulousness, in palsied shaking, in mercurial tremor, and in choraic agitation, the circulatory powers are always depressed. A flushed face and a bounding pulse are never present. So also with the tremulous movements before and after fever. Rigor is coincident with a sense of coldness, a feeble pulse, a sunken countenance, a corrugated skin; subsultus, with a circulation faltering on the very verge of stagnation. Nor is this coincidence accidental. It is not—because rigors disappear as the system rallies, and cease when the pulse and heat return. It is not—because they reappear in the form of subsultus when the feverish turmoil is past, and death at hand.

2. In convulsion the real state of the circulation is more masked than in tremulousness. It is so in hysteric convulsion. In an immense number of these cases the circulation is in a state of syncope, or virtually so; but is this the rule? Is the pulse never excited? So far as we know—never. Fluttering there may be, and often is, and this fluttering may be confounded with excitement, and called by the same name, but there is never true excitement. Convulsion and collapse, and not convulsion and fever, go together; but we leave this question in abeyance for the present.

The condition of the vascular system in the convulsions of fevers or inflammations is in no way obscure. These convulsions appear in the initial cold stage, or in that of final prostration, and never during the height of the disorder. They appear only when that cold stage is unusually severe, as in cases of malignant small-pox or puerperal fever, or when that final prostration is rapidly deepening into actual dissolution. They disappear with unfailing regularity whenever the system rallies, whether this be in the ordinary course after the incipient collapse, or in returning health after fever. It is so also with the convulsions of the fevers or febrile affections of childhood. They take the place of rigor or of subsultus, and invariably avoid the hot stage. So again in the inflammations of childhood, they occur before and after, but never during the hot stage. In inflammation of the brain, for example, the malady frequently commences in convulsions; after this, the system rallies, inflammation is developed, oppression follows, then prostration, and when this is deep enough, convulsions return to close the scene. In the inflammatory irritation of teething, the little patient is in a state

of hectic exhaustion—now cold, now hot—the skin dusky, and the pulse scarcely perceptible, when the convulsion happens. The great source of error in all these cases is the double-meaning of the words fever and inflammation, each of which includes two diametrically opposite conditions of the vascular system—collapse and excitement. It is this double-meaning which has contributed more than anything else to confuse the true knowledge of muscular pathology, for if, discarding these words, care had been taken to note whether the phenomena in question were coincident with collapse or excitement, we should long ago have been rid of much obscurity and perplexity in these matters.

The state of the circulation in the convulsions of death, and particularly of death by hemorrhage, is manifestly one of the lowest conceivable depression. The blood escapes from the vessels until they are well-nigh empty, or the vital heat is chilled by commencing death; these are the changes which have come over the circulation under these circumstances.

In the great majority of instances, therefore, convulsion is coincident with, and dependent upon, the very reverse of vascular activity; and, this being the case, we must claim the benefit of the doubt in any individual case in which doubt may exist, as in some forms of hysteric convulsion.

3. The state of the circulation in spasmodic disorders is more easily understood than it is in convulsion. The pulse is particularly feeble in cramp. Thus, in a child at present under my care, whose feet and hands have been liable to cramp on exposure to cold, the cramped parts are perfectly cold and white, and the most careful examination cannot detect any pulse at the wrist or ankle; and, after the cramp has passed off, the pulse is most miserable, and not to be detected without difficulty. The pulse also is often imperceptible in the cramps of cholera, and always extremely feeble. It is as in the rigors of fever, with which these spasms are analogous; only in this case coolness has become coldness and clamminess, the wrists are pulseless, and paleness has deadened into sallowness and blueness.

In catalepsy the appearances are so death-like as to suggest the idea that the blood is stagnant. Dr. Watson says, the patient, in such case, "looks like a waxen figure, or an inanimate statue, or a waxen corpse," and this was certainly so in the case to which I have already referred, as falling under my own care, for here the catalepsed parts were cold, pale, and pulseless, or nearly so.

The state of the circulation, in tetanus, may be illustrated by two recent cases, which cases are not the less fitted for our purpose because they were reported with a different end in view. One of these was sent to "The Lancet" by Mr. Salter, of Dorset. It was that of an old man, upwards of seventy-three years of age, whose foot had been partially destroyed in a threshing-machine. The spasms set in after a prolonged employment (for three or four days) of strong purgative mixtures of salts, senna, and tartar-emetic, along with morphia and aperient pills. During the spasms, the injured foot was pale and numb, the skin moist, the countenance cadaverous. The state of the pulse is not specified; but what this was is to be inferred from the foregoing particulars, as well as from the adoption of vigorous stimulation, with brandy and ammonia, when the spasms occurred. Indeed, in a man so old, so injured, and so antimonialized and purged, only one conclusion is possible—namely, that the circulation must have been very greatly depressed. This appears, also, from the sequel, which was this: under the new mode of treatment the system rallied, and the tetanized parts relaxed; and this rallying and relaxation lasted for several days, at the end of which time the symptoms relapsed. This was after an exhausting and agitating interview with some friends. Again stimulants were had recourse to, and again the spasms disappeared, not to return. In the relapse, the pulse is stated to have been extremely feeble, and of a typhoid character. The second case is by Mr. Sanger, of Alfreston, in Sussex. In this patient, the state of the system is stated to have been such as to contra-indicate the use of any lowering measures, the spirits being faint and low, the countenance anxious, the pulse 98 and weak, and so on. Quinine, ammonia, and turpentine, were had recourse to; and the result of the treatment was, that the system rallied, and the spasms subsided. These instances illustrate the large body of cases of tetanus, for certainly the majority are in no way complicated with any kind of degree of vascular activity; but do they illustrate the rule? Are there no excep-

tions, in which there are plethoric or other active symptoms? The answer, as it seems to us, is clearly in the negative. It is stated by all authorities, and must be evident to all who have had any experience in the disease, that there is *no fever* in tetanus; and this, of itself, is almost sufficient to prove our position; for so anxious have medical men been to find some fever in maladies of this class, that to admit its absence is almost equivalent to admitting the opposite. Undoubtedly the vascular state in tetanus assumes many aspects, and some of these are such as to deceive an unpractised eye or an impatient finger. There can be no mistake in cases such as have been described, but there may very readily be in irritable subjects. In such persons, owing to the excitement of the examination, or some unusually severe pang at the moment, the pulse, when first felt, may beat with considerable force and fulness, and so give rise to an impression of fever or plethora; but this rapidly passes off, and the colour fades, and the pulse flags and falters. The pulse, indeed, is eminently changeable, and any excitement which may be manifested in it is quite momentary, in comparison with the almost constant state of depression. It must also be borne in mind, as confirming the same view, that in fatal cases the spasms of tetanus continue, and often increase, in spite of the progressive failure of the circulatory powers—a fact which is only explicable on the supposition that the spasms are dependent upon the very reverse of vascular activity.

The same conclusion arises also out of the consideration of cadaveric rigidity, for in this case we have a state of tetanoid, or rather cataleptoid contraction, which, subsists with stagnation and death of the blood, and which endures untiringly until the muscles are broken up by incipient decay.

In spasm, therefore, as in tremulousness and convulsion, there is abundant evidence of a decided lack of circulatory power. It would seem, also, as if that lack were greater in convulsion than in tremulousness, and in spasm than in convulsion. —*Lancet, March* 19, 1853, *p.* 264.

16.—CASE OF THE BENEFICIAL EFFECTS OF STRYCHNIA IN IMPAIRED SPINAL ENERGY.

By Dr. Marshall Hall, F.R.S., &c.

[In remarking upon this case, Dr. Hall says,]

Such cases occur from causes of nervous exhaustion, such as excessive study, muscular effort, sexual indulgence, &c.; and in such cases strychnia has appeared to me the appropriate and useful remedy.

This agent acts distinctly on the spinal marrow. In excess it induces spasmodic affection. It is therefore contra-indicated in cases of *irritation* of this nervous centre and of spasm. Its appropriate use is in spinal *exhaustion*. It constitutes one of our best tonics, improving the general health, and conducing to the recovery of strength and flesh.

I have given it in minute doses thrice a day, in the midst of meals, for many months. The following is the formula which I have adopted:—R. Strychniæ acetatis, gr. i; acidi acetosi, ℥xx.; alcoholis, 3ij; aquæ distillatæ, 3 vi. M.

Of this, ten drops, containing one-fiftieth part of a grain, may be given thrice a day; but I have generally begun with five, and gone on to fifteen.

In two cases only have I known it to disagree. It seemed to affect the head. In many the patient has improved in looks, as in general health and strength, without experiencing anything but good from it.

I am giving the strychnia a cautious trial in the epilepsy attended by pallor, thinness, and nervous exhaustion; in the paraplegia the result of sexual excesses, and in which neither pain nor spasm has occurred; and in the paralysis agitans.—*Lancet, Nov.* 27, 1852, *p.* 486.

[In another paper, Dr. Hall says,]

I have been recently engaged in some experiments on the effects of strychnia and their remedies. I can only give a brief notice of them at the present moment; on a future occasion I will give the experiments themselves, with their interesting details.

The effects of the acetate of strychnia show themselves under *two* forms or de-

grees, according to the dose of the poison in relation to the powers of the animal: these are—(1) the *milder*, and (2) the *severer*.

If a dog be placed under the milder form of strychnism, it passes into a condition of extreme spinal excitability. If, when in this state, it be continually excited, like the frog under a similar influence, it certainly dies; if, on the contrary, it be placed in a position of absolute quiet, it as certainly recovers—facts which suggest our principle of the treatment of tetanus and of hydrophobia.

If the animal be placed under the severer form of strychnism, a different series of phenomena occurs. In the violence of the paroxysm, extreme laryngismus, extreme efforts at respiration, apoplexy, asphyxia, death, occur—unless one measure be adopted; that measure is—*tracheotomy!*

Let alone, the animal would infallibly *die*—of laryngismus; tracheotomy being performed, he lives!

But the patient affected with hydrophobia—and *all* hitherto so affected *have* died—have died of laryngismus. Now of laryngismus he *would not* die, if efficient tracheotomy were performed; would he, then, die?

I must add, in connexion with this last remark, that a dog, saved from the effects of laryngismus by tracheotomy, did afterwards die of exhaustion.

I repeat that all patients afflicted with hydrophobia have died hitherto; that all have died of laryngismus; that of laryngismus they need not die, and will not die, if tracheotomy be performed!—that is, no patient need die from the cause from which all hydrophobic patients have died hitherto.

If tracheotomy be performed, will the hydrophobic patient die? This question cannot be answered without an appeal to experiment. As the animal affected with the severer form of strychnism was saved from the first effects of the poison, yet died afterwards of exhaustion, the hydrophobic patient may die of ulterior effects of the poison. Even then, the terrors of this most terrific of diseases—the fits of strangulation and of suffocation—will be averted.

From the experiments to which I have adverted two practical inferences are deducible:—

1. Let the tetanic patient be preserved from all external excitement absolutely.

2. Let the hydrophobic patient, whilst equally preserved from excitement, be submitted to efficient tracheotomy.—*Lancet, Feb. 5*, 1853, *p.* 128.

17.—*Formula for Tic Douloureux.*—[Mr. J. Wilson Beaumont, of Mirfield, Yorkshire, speaking of the value of the following combination, says,]

It is one for which I do not for a moment claim novelty; but having seen so much good from it, I cannot forbear, on grounds of humanity and benevolence, from communicating it to others. It is as follows:—

℞. Ferri potassio-tartratis ʒij; vini opii ℥lxxx; aquæ cinnamomi ʒviii. M. Ft. mist.

Give two tablespoonfuls three times a day, or three tablespoonfuls at once, if the pain be very severe.

I do not pretend to say *why* this particular combination should be *apparently* so much better than others, but certainly I have not known it yet to fail.—*Association Med. Journal, Feb.* 11, 1853, *p.* 137.

18.—*Neuralgia.*—Cazenave recommends in facial neuralgia an ointment composed of chloroform 20 parts, prussiate of potash 10 parts, and lard 60 parts; a piece the size of a walnut to be rubbed over the painful part. An oiled silk cap is then to be worn some hours.—*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 573.

DISEASES OF THE ORGANS OF RESPIRATION.

19.—ILLUSTRATIONS OF LARYNGEAL AND PHARYNGEAL DISEASES, WHICH ARE FREQUENTLY MISTAKEN FOR, OR ASSOCIATED WITH, PHTHISIS PULMONALIS.

By Professor Bennett, Edinburgh.

[In the first case related by Dr. Bennett, although no disease or abnormal sound could be detected in the chest, yet the patient, a gentleman, had hawked up from time to time a small clot of blood about the size of a pea. He remarks:]

The origin of the blood in this case appeared to me at that time to be very mysterious. It was not florid. There was no reason to suppose it to be of pulmonary origin. There was nothing in his voice to indicate laryngeal disease. I did not examine the pharynx, not being then aware of the importance which ought to be attached to it. I was consequently left in great doubt as to the origin of the blood, and of the best means of removing anxiety from my patient. My uncertainty, however, was partly dispelled by the following case:—

I was requested by an assurance office, in July 1850, to examine the chest of Mr. M., a merchant, aged about 30, who said he laboured under no kind of complaint, with the exception of occasional sore throat, and expectoration of mucus tinged with blood. He was tolerably stout, took long walks without uneasiness, and suffered from no difficulty of respiration or from cough. Repeated examination of his chest failed to elicit any physical sign indicative of pulmonary disease. I therefore certified that his lungs were healthy. In October 1851, this gentleman called upon me again for advice, under the following circumstances. The soreness of the throat had latterly increased, and considerable cough was induced, after which he spit up mouthfuls of purulent matter, frequently tinged of a red colour. He brought me some of this sputum to examine, which consisted of mixed blood and pus, of a dirty brick-red colour. Examination of his chest again convinced me that the lungs were unaffected; but in the interval I had paid attention to the writings and practice of Dr. Horace Green, of New York: and I now examined his throat, when the cause of his symptoms was at once apparent. The fauces and upper part of the pharynx were studded over with nodular swellings, varying in size from a pin head to that of a pea. Many of them were bright red and fungoid in character, probably the origin of the extravasated blood, whilst considerable patches of purulent matter adhered to several parts of the mucous membrane. I applied a sponge, saturated with a strong solution of the nitrate of silver, to the affected parts. In three days he returned, having been much relieved, when the application was repeated. I have not seen him since.

These two cases convinced me that certain symptoms which have hitherto been considered as indicative of phthisis might have their origin entirely in the fauces, pharynx, and upper part of the larynx. The cough so occasioned, with the purulent expectoration, often tinged with blood, frequently so resembles that occasioned by phthisis, as not only to induce alarm in the minds of the patients, but frequently to mislead the medical practitioner. I have now met with many such cases, which have been mistaken for phthisis, and which have been treated for that disease without any effect, until local remedies were applied, when they, for the most part, disappeared, or became much better.

[In a second case, that of a female aged 25, there were all the symptoms of phthisis present—frequent cough with hemoptysis, copious purulent expectoration, night sweats, and loss of appetite with vomiting. On examining the fauces they were found covered with purulent mucus. The cough was also ascertained to be convulsive, and a ringing sound was heard over the larnyx on inspiration. Laryngitis was the disease diagnosed. The solution of nitrate of silver (3ss. to ℥j. of water) was applied to the fauces, and afterwards the sponge was introduced into the larynx, with some degree of benefit. Blisters to the larynx were also applied; and as the disease seemed to have a syphilitic origin, iodide of potassium and bitter infusions were the internal remedies resorted to. This patient, though not cured, was considerably relieved. Dr. Bennett concludes by saying,]

The cases now given, with others that might have been adduced, have satisfied me that lesions of the pharynx and larynx ought to occupy the serious attention of the practitioner in all cases of pulmonary diseases, and that the following practical conclusions may be drawn from them :—

1st. That not unfrequently diseases, entirely seated in the larynx or pharynx, are mistaken for phthisis pulmonalis.

2d. That even when pulmonary phthisis exists, many of the urgent symptoms are not so much owing to disease in the lung as to the pharyngeal and laryngeal complications.

3d. That a local treatment may not only remove or alleviate these complications, but that, in conjunction with general remedies, it tends in a marked manner to induce arrestment of the pulmonary disease.—*Monthly Journal of Med. Science, Dec. 1852, p. 513.*

20.—WHAT IS TUBERCLE? WHAT IS PHTHISIS?

By Dr W. Jenner.

[It is strange, says Dr. Jenner, that even at this day we are obliged to ask this question. Has it not been satisfactorily answered by every author who has written on this subject within the last quarter of a century? It would seem not, and therefore for our instruction, Dr. Jenner, in reviewing the works of Ancell, Cotton, Virchow, Henle, Reinhardt, and others, gives us an epitome of the opinions held on this subject. He says:]

The opinions now held in regard of tubercle may be divided broadly into two classes; the first is, that tubercle is an exudation essentially pathological in character. "It is beyond doubt," says Rokitansky, "that tubercle is an exudation." The second, that tubercle is merely a retrograde metamorphosis of pre-existing structures. This latter notion is strongly advocated by Virchow, in the papers before us.

The opinions referred to, however, readily admit of more minute division; and for the purpose of enabling us, in a subsequent article, to estimate what amount of the truth they respectively contain, we shall here briefly describe them under five heads.

1st. Tubercle is a specific exudation poured out under the influence of a special general pathological state; in other words, it is the local anatomical expression of a definite constitutional affection. Or, as Mr. Ancell says: "As healthy blood supplies a blastema or succus nutritivus for healthy nutrition, tuberculous blood supplies a tuberculous liquor from which tubercle is formed."

Lebert's statement, that he had discovered in tubercle a peculiar and distinctive microscopic element—a tubercle-corpuscle—appeared to give force to this view; and coinciding as it did with opinions previously entertained, was received in this country as strong evidence in favour of the favourite creed. If this opinion be correct, tubercle ranks pathologically and anatomically in the same order as cancer, there being in both a specific constitutional disease, a specific exudation, and a specific or distinctive cell.

The truth or falsehood of this view will come hereafter to be examined.

2. Tubercle is a degraded condition of the nutritive material. Some pathologists, as Dr. C. J. B. Williams, refer tubercle to a "degraded condition of the nutritive materials from which new textures are formed," and hold that tubercle differs from fibrine or coagulable lymph not in kind, but in degree of vitality and capacity for organization. Examined microscopically, tubercle contains, according to Dr. Williams, a few irregular-shaped, shrivelled cells, with imperfect nuclei, the main substance being composed of granular or amorphous matter. "No fibres are," he says, "perceptible."

3. Tubercle is composed of the products of inflammation. Reinhardt is at once the most recent and able advocate of this opinion, and the high reputation as a microscopical observer he enjoyed among those most intimately acquainted with him, recommends his statements to our attentive consideration. Reinhardt sees in tubercle only the products of chronic and repeated inflammations. In some cases of chronic pneumonia, Reinhardt found a gelatinous fluid in the cells and interstitial tissue, containing epithelium and pus. At a later period the epithelium was in

a state of fatty degeneration; the fluid was diminished in quantity; the interstitial tissue contracted; the cells lessened in volume; and, finally, a kind of cicatrix was formed. In various stages these states have been termed, respectively, gelatinous infiltration, gray tubercle, and tubercular cicatrix. In other cases of so-called yellow tubercle, Reinhardt found pus in the air-cells; the pus became thickened, dried up, and the nuclei disappeared. Shrivelled pus-cells, and not nuclei which have become free, form the so-called tubercle-corpuscles. Although Reinhardt considers that in some instances the tuberculous process arises from local causes—viz., hyperhæmia and recurrent inflammation; yet he admits that in many cases these indicate a state of dyscrasia.

4. Tubercle is composed of dead-tissue elements: such is Henle's opinion. In the lungs, he says, tubercles are bloodless, dead (nekrotesche) lobules, gorged with the dried-up elements of the epithelium or with pus, heaps of granules and granular cells, and these dead lobules continue in connexion with the sound pulmonary tissue, as a withered limb may with the trunk.

"The corpuscles," he says, "which are found most frequently and in the greatest number in miliary and crude soft tubercle, and which have generally been described as specific, are the corpuscles named by me 'elementary corpuscles,' and they belong to that variety of these which is rendered pale and dissolved by acetic acid. I have proved," he continues, "that such forms arise out of cytoid corpuscles long exposed to the air." And, further on—"The microscopic analysis renders it probable that the nucleated cells arise out of the epithelium of the air-cells; it offers no explanation as to whether the cytoid corpuscle, the products of the development of which we find in the air-cells, arise out of bronchial mucus, or from the pus of circumscribed inflammation, or from extravasated blood."

Tubercle corpuscles have already been stated by Gulliver to be "effete and shrunken primary cells"—a definition which might be adopted by Henle.

These views of Henle agree in the main with those propounded, in 1843, by Dr. William Addison:—"A tubercle," says Dr. W. Addison, "involves or includes in its substance the vesicular structure of the lungs: minute bloodvessels, lobular passages, and air-cells, are all capable of demonstration on the dissection of tubercle under a Coddington lens; the bloodvessels are no longer permeable, but their presence may be demonstrated." Tubercles themselves are composed of abnormal epithelial cells. Henle maintains that gray granulations are imperfectly coagulated fibrine, and if they sometimes pass into yellow tubercles, cannot be considered as their first stage. He discards the idea of a specific exudation, and advocates the opinion that the first change, as far as the lungs are concerned, is coagulation of blood in, and obliteration of the vessels consequent on, defective capillary circulation, arising from imperfection of the respiratory mevements.

5. Tubercles are composed of metamorphosed organized elements—a metamorphosis co-ordinate with the fatty and the waxy degenerations. This is the opinion of Virchow. His views are developed at some length in the papers placed at the head of this article; and as they contain much that is peculiar and novel, we shall enter into them somewhat fully.

To do justice to the opinions of Virchow we shall first describe what we understand him to mean, and then give his own summary of his opinions in the words he has himself used in one of the papers above mentioned.

A tubercle is composed essentially of dead tissues, the death of the part being occasioned by the accumulation of cells amid its vessels, and consequent compression of those vessels, and cessation of the circulation through them. The cells which thus play so important a part in the formation of tubercle may have their origin,—

1. In the physiological cells of a structure or organ. The mode in which the increase in these cells takes place may, he says, be exquisitely perceived in the lungs. The first step in the tuberculous metamorphosis in these organs is an increase in the epithelium of the air-cells by endogenous formation. "I have seen," Virchow says, "cells with five large, oval, granulated nucleolated nuclei." Subsequently the "cells fall to pieces, a granular detritus is left, in which the nuclei remain for some time as shrivelled, irregular, opaque bodies, finally these also crumble, and an entirely amorphous, finely granular mass remains behind." It is these nuclei, shrivelled, irregular, and opaque, which, in Virchow's opinion, consti-

tute the tubercle-corpuscles described by Gluge and Lebert. "*They are not*," he says, "*exudation corpuscles.*" "The peculiarity of the local process lies in the tendency of the organization, and by no means in a peculiar exudation." In *lymphatic glands* affected with so-called scrofulosis, there is hypertrophy of the elements of the part through endogenous nuclei formation. The cells enlarge to five or six times their normal size, and as many as twelve pairs of nuclei may be seen in the same cell. The nuclei probably increase in number by cleavage into pairs. What share an exudation takes in this change, Virchow says, he "cannot decide." Still he maintains that tubercle is not developed exudation, but merely metamorphosed pre-existing tissue-elements—elements to which, in their primary state, the name of tubercle could not be applied; and that, consequently, the tuberculous metamorphosis is not the mark of a specific process, of a particular constitution.

2. The cells by the accumulation of which the vessels are compressed and death of the part produced, may have their origin in the endogenous development, or in atrophy of the cells of cancer, pus, or typhous matter, but not in their simple desiccation.

3. These cells may be developed in the fibrine poured out in what is termed tuberculous inflammation. Is the tubercle here formed directly of inflammatory exudation-matter? Virchow says, No: the whole mass of fibrine passes on to organization; but while "one part developes itself into uniting tissue and vessels, another forms nucleated and cellular formations, which rapidly increase by endogenous growth, so that their number at some points is very great, and the amount of the endogenous nuclei is occasionally even colossal." The subsequent steps of the process—*i.e.*, death of the part, disruption, atrophy, shrivelling, and desiccation of the cells, are the same in all three cases.

But although all pathological and all physiological cell-growths may thus tubercularize, yet there is a local process which leads to the exudation of a material, the cells resulting from the development of which, whether they be physiological or pathological, so constantly tubercularize and lead to local death, that this may be said to be the ordinary termination of the process. This process, in the phraseology of Virchow, is tuberculosis; while scrofulosis is used by him to signify the constitutional state in which tuberculosis occurs.

To pass from the general state to the particular local lesion.

Scrofulosis is that constitutional affection which commonly leads to tuberculosis.

Tuberculosis is that local process in the ordinary progress of which there occurs an exudation of a material, nutritive or pathological, which developes into cells that tubercularize or undergo the tuberculous metamorphosis.

Tubercularization is the local process by which the metamorphosis of the elements of a part into tubercle is effected—*i.e.*, endogenous development, atrophy, shrivelling, and desiccation of the cells.

A tubercle is formed of the detritus of the metamorphosed and atrophied cells, with the remains of the vessels, &c., of the part in which they were seated.

It requires some little attention to grasp fully Virchow's meaning; and to those who have been accustomed to use the word "tuberculosis" to denote a special constitutional affection, the employment of the term scrofulosis to express this state, and the restriction of the word tuberculosis to the local changes going on in a particular part, may be confusing; but a little consideration will prevent any misconception.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 184.

21.—ON TUBERCULOSIS.

By Henry Ancell, Esq., Lecturer on Materia Medica and Medical Jurisprudence in the School of Anatomy and Medicine adjoining St. George's Hospital, &c.

[First let us see what are the conclusions at which Mr. Ancell arrives after a consideration of the state of the blood.]

Mr. Ancell infers, from considering the analyses given by various chemists, Dr. Fricke, Andral, and Gavarret, and Dr. Glover, first, that the blood in tuberculosis is deficient in the proportion of red globules; second, that the albumen is augmented in quantity, but imperfectly developed and defective in quality; thirdly,

that there is an excess of fibrine, but that this principle also is defective in its nature; fourthly, that the watery part of the blood is increased in proportion to the solid constituents; fifthly, that it is not ascertained whether the fatty principle is diminished; and in the sixth place, that nothing very satisfactory is ascertained as to the increase or diminution of the saline principles. A general view of the changes in all these elements and principles in tuberculosis, the author attempts to give in the following diagram.

Tuberculous Blood,
Defective in vital properties; the essential nature of the defect unknown.

- **Red Corpuscles.**
  Deficient in number.
- Deficient in structure.
  - Globulin *deficient.*
  - Haematin *deficient.*
  - Iron *deficient.*
- **Liquor Sanguinis.**
  Vitiated in quality.
  - Water in *excess.*
  - Albumen; *in excess but defective in quality.*
  - Fibrine; *rather below than above the standard; def. in quality.*
  - Fats; *probably deficient.*
  - Colouring matters *modified.*
  - Alkaline salts *deficient.*
  - Earthly salts *deficient?*
  - Lime in *excess?*
- **White Corpuscles.**

It thus appears that after great chemical research, much is doubtful and uncertain, if not positively in a state of confusion. Mr. Ancell nevertheless thinks, that the most general character of the blood in *tuberculosis* is diminished vitality, and that in reference to the diminished amount of the red globules, tuberculosis may be called a consumption of the blood. The blood, he thinks, possesses, in the healthy state, a certain degree and amount of vitality. This amount of vitality is denoted by its dynamic properties of endosmose and exosmose in the corpuscles, by its organic contractility, by its power of assimilating old and new matter to the form of the blood, by its power of forming red corpuscles and *liquor sanguinis*, the consumption of red corpuscles, and the waste of *liquor sanguinis* in nutrition. When the sum of these physiological actions, says Mr. Ancell, is within the physiological range, and they are in harmony with each other, a sufficient number of corpuscles being formed and wasted, and all the constituents of the *liquor sanguinis* being complete and proportionate, and renovated according to the requirements of the different tissues, the blood possesses the healthy degree of vitality. In tuberculosis, on the other hand, the sum of these actions is below the physiological range; moreover, the proportions of the constituents of the blood are subverted, and their qualities are deranged. This denotes a low degree of vitality, which is consistent with all the phenomena of the tuberculous predisposition, and with the signs of *tuberculosis* in its various forms.

Tuberculosis is a peculiar state of the blood, if not in the first instance, at least in a very early part of its history; and throughout, this condition of the blood not only continues, but in certain respects is increased, and becomes more intense. It is therefore not wonderful that analytical researches of chemists differ in their results; and that it is so difficult to obtain results which are harmonious and consistent. The blood is in a constant state of change and fluctuation, according to the variable state of those functions on which the state of the blood depends; —the condition of digestion; of assimilation, primary and secondary; of respiration; of secretion; probably, as Dr. Holland suggests, of innervation. If digestion in the stomach and *duodenum* is imperfect and disordered, assimilation is imperfect and disturbed in consequence; and the chyle which is transmitted through the lacteals and veins is either imperfectly elaborated, or contains elements which it ought not to contain, or is destitute of elements which it ought to possess. If respiration be in fault, if the air breathed be bad from poisonous miasmata, we know from ample and undoubted experience that this acts in a most direct manner

in deteriorating the qualities and condition of the circulating fluid. Looking at the inhabitants of miasmatic districts, and beholding their pale sallow faces and dingy-coloured skins, affords sufficient proof of the correctness of this inference. There may further be something in the action of the lungs, in the mode in which these organs act upon the air, that may modify and greatly influence the state of the respiratory function.

Further, if the various processes of secretion be feeble, inactive, and perverted; if articles which ought to be eliminated from the blood be retained in it, as the elements of bile, of urea, and probably other substances; it is easy to see that the blood so constituted cannot be in a healthy state. This is a frequent condition of disease in the blood in gout, rheumatic gout, chronic rheumatism, and several other morbid states connected with impaired and retarded digestion.

But, independent of all these sources of contamination and disease of the blood, it would appear that this fluid, under certain circumstances, loses of itself, as it were, its proper nutritious and reparative power. The blood evidently possesses a power of assimilating certain foreign substances,—all the organic products employed as articles of food. It is not ascertained whether it owes this power to some inherent property, or to the saline matters with which it is normally impregnated. All that is known is, that when the saline matters are deficient, disproportionate, excessive in one direction and defective in another, the blood loses its power of nutrition, or rather becomes unfit for nutrition, and disease follows;—paleness, feebleness, loss of flesh and strength; in short, an anæmious state. This condition the late Dr. Prout seemed disposed to attribute to the deficiency of saline ingredients, which he believed were requisite to the normal healthy constitution of the blood; and, in consequence of which being deficient, those actions and processes, probably electric, or electro-magnetic, for the requisite applications of the nutritious parts, did not take place. All this must of necessity be matter of conjecture; and, though it is not desirable to admit unknown causes of morbid conditions without sufficient proof, yet various facts seem to show, that of this there is as much probability as of many other morbid states.

One observation more only on this subject we make. There is too great a disposition in all instances to consider disease as a positive state;—as something having an active existence. To do so is quite natural; for it would be difficult to speak or to reason about it without doing so. At the same time it ought never to be forgotten, that disease is, correctly speaking, a negative condition. The positive condition is health; the absence of this condition, the negative of it, is disease. So with regard to morbid states of the blood, and especially that called *tuberculosis*, they are not positive conditions. They are merely the absence of the healthy state of this fluid, whether this consist in the presence of morbid matters that ought to be rejected, or in the absence of healthy elements, the presence of which is requisite. The blood ceases, from various, causes to possess those principles and properties which fit it to act as a nutritious fluid. It accordingly does not nourish; and the organs and body at large are wasted, from not being supplied with materials to repair waste. It is true that the blood, besides losing certain principles and properties, possesses others which are not natural—which are, in short, morbid. But it is to be remembered, again, that these morbid principles are not really new principles, but *degraded forms of original principles*. Even the analytical researches quoted by Mr. Ancell show how slight is the change, how small and insignificant, apparently, is the deviation, in the most intense instances of tuberculosis. No element or principle is absolutely wanting. One is a little in excess, another is a little in deficiency; and these are all the tangible points on which the pathological inquirer can fix. Perversion, even in the proper sense of the term, it is impossible to detect. The blood is in some manner without those principles and qualities which enable it to be employed as a nutritious fluid; and this seems to be all that can be said, after much microscopical examination, and not a few chemical experiments.

[Mr. Ancell considers the following inferences are established from his investigations [illegible] the state of the blood in tuberculosis.]

"The debility of tuberculosis indicates a *direct* loss of power, and the whole of the phenomena of the predisposition and the symptoms of the disease shew,—

"1. That from the earliest invasion, the sum of the vital force is either below the standard of health, or it is relatively low as respects the structure and organisation of the individual.

"2. That this diminution in the sum of the vital force depends especially upon diminished vitality of the blood, and of the cellular, gelatinous, and muscular tissues produced and nourished from an imperfect blastema derived from the diseased blood.

"3. That, as tuberculosis advances, the sum of the vital force for the whole system continues to diminish; this loss of vital force being exhibited not only in the defective manifestation of voluntary and involuntary muscular power, but in the diminished resistance of the vital powers of the blood and of the cellular and muscular tissues to the change of matter in the animal body; hence, in tuberculous subjects, the rapid diminution of the red corpuscles of the blood, the deterioration of the vital qualities of the *liquor sanguinis* and of the blastema, the diminished plastic power of the cells, the low calorific power, and the emaciation.

"4. That frequently, but by no means universally, the nutritive powers of the blood, as respects the nervous tissue, remain undiminished, this tissue not requiring for its nutrition compound principles identical with it to be introduced into the blood with the food, and having a nutrition peculiar to itself, differing from that of the cellular and muscular structures. Hence, the diminution of vital force is not exhibited in the nervous system, but, as conductors of the force generated by the change of matter in the whole system, the nervous system remains intact. The particular condition of the vital force is, nevertheless, manifested through the nerves; hence activity and action without power, morbid irritability, &c. It is the highest manifestations of the vital force dependent upon nervous structure, as sensibility and mental phenomena, which so frequently remain unaffected during the physical degeneration. These phenomena are often rather augmented than diminished, the nervous matter, although perfect in structure, being more exposed from the waste of its cellular coverings; hence, frequently, increased sensibility to impressions in tuberculous subjects; and this occurring in the predisposed from the earliest age, and throughout a series of years, an acuteness of intellect is often exhibited.

"In estimating the symptoms of tuberculosis in a practical point of view, their absolute value, taken singly, is comparatively little, since one and all occur in other diseases. It is their relative value,—the association of several,—or the harmony of many in one case; the manner in which they arise,—and their mode of succession,—which distinguishes them from the symptoms of other diseases, and assists us in the differential diagnosis. Many of these symptoms are found associated in chlorosis, simple anæmic debility from venereal excesses, and other conditions of the economy. To those who have well considered the details of the tuberculous constitution, the difficulty of the diagnosis is considerably diminished. The symptoms, viewed in combination and relatively, rarely mislead, especially when they are decided in their development, constant and progressive. In difficult cases our judgment may be frequently determined by a knowledge of the antecedent existence, or the absence of the predisposing and inducing causes,—as, for instance, of the hereditary taint, or a long-continued anti-hygienic regimen. In reference to the general disease, it has to be kept steadily in mind, that the diagnostic object is not to determine whether a local tuberculous development exists,—a tuberculosis pulmonalis or abdominalis,—but rather to determine *whether the patient is truly affected with the blood disease, and thereby threatened with its local manifestation.* The successful treatment of the disease of the blood in this stage, based on a knowledge of its nature and causes, is, in many instances, certain. The successful treatment of the disease, after it has localised itself, is frequently impossible.

"While I refer all the symptoms described to the tuberculous state of the blood on the one hand, there is frequently, as they present themselves in various groups, a direct relation subsisting between them and the pathological effects of tuberculosis to be described in another chapter. The defects of the osseous system, arising from perverted organisation and nutrition of the bones, are in direct relation to the scrofulous affections of the bones, which so frequently occur. The malnutrition of the lungs and thoracic parietes are in direct relation to the occurrence of the disease of the lungs. The weak organisation and depraved digestive fluids of

the alimentary canal, taken with bad diet and other anti-hygienic influences, are in direct relation to mesenteric phthisis. Again, as illustrating the relation of cause and effect in the ultimate result, while the subjects of tuberculosis are fed with unwholesome and insufficient diet, they present after death, more frequently than other tuberculous subjects, pathological lesions of the alimentary canal. Fournet states, that tuberculous subjects who had been fed on a sufficient and wholesome diet, scarely ever experienced disturbances of digestion until towards the close of life, and after death he did not find a trace of intestinal tuberculization; while in those who, on the contrary, had been badly nourished for a long time, the dyspeptic symptoms were very prominent, and intestinal tuberculization was almost constant. I believe this statement to be somewhat too exclusive. But at the same time the complicated relations subsisting between—1) the effects of the blood disease and the local disease; 2, the effects of external agencies on the animal economy modified by the blood disease are undoubted; and when we consider them, it only enhances the necessity which exists of our improving the pathology of the general disease.

"The uniform association of structural and functional aberration in the tuberculous constitution is very striking. The remark made by Louis, that 'a function may be more or less seriously interrupted for a long time without the organ presenting any appreciable change of texture,' is undoubtedly true; but we must not overlook the qualification,—*appreciable*. This great pathologist evidently meant, —without any of those well-marked pathological results which usually enter into the post-mortem descriptions. A change of function always implies a modification of structure, and most especially so in a tuberculous subject. In such a subject debility, defective digestion, and depraved secretion, for instance, never occur without implying a modification of structure in its nature tuberculous.

"Such, according to my view of tuberculous and scrofulous affections, is tuberculosis, as an essential disease of the blood, to which man, and the animals immediately beneath him in the zoological scale are subject more or less, at all periods of life, from early embryotic development to old age and decrepitude. Many will regard the disease thus described as an abstraction; and it must be admitted, that as it comes under the cognisance of the practitioner, it is rarely made the subject of his consideration and treatment until some local affection of a particular tissue or organ has proceeded so far as to complicate its symptoms, and still more rarely does it proceed to a fatal issue without some local affection having supervened. Nevertheless, throughout the progress of all the local diseases constituting varieties of tuberculosis, the symptoms and characteristics of the general affection may be recognised; it occasionally happens, that tuberculosis proceeds in the adult to the last stage of marasmus and a fatal issue without hæmoptysis, the aggregation of tubercle, or any obvious local affection. This is a more frequent occurrence in the early periods of life. It frequently appears also, that some local affection—as tubercles in the lungs—supervenes, but of so circumscribed an extent, that it interferes little with the functions of the organ, or the general symptoms of tuberculosis, or of the tuberculous predisposition, and from hygienic or other causes the general affection subsides, and nature renders inert the local mischief by a cretaceous formation or a fibrinous deposit. Occasionally the local affection is too trivial to compromise life, and yet the patient goes on dying of the general disease. This frequently happens in children, and sometimes in adults, as proved by symptoms before death, and the existence of too circumscribed an organic affection, detected *post-mortem*, to account for the death; but the most frequent result is, that organic disease sets itself up, and complicates and very materially modifies and precipitates the symptoms, progress, and termination of the general affection.

"The essential condition of the blood, upon which the signs and symptoms of tuberculosis depend, is still a problem. In fatal cases, one or more organs, as the lungs, the brain, the mesentery, and the intestines, have generally become so far affected as to be incompatible with the continuance of life. In a future chapter the special pathology will be fully considered, and to complete the history of the disease, the influence of the various organic affections over the original disease, and in the production of the usual fatal termination, ought to be estimated; but it may be here stated, that the diseased condition of the blood, the deterioration of the circulatory and more stationary fluids and solids, the emaciation, and the failure of

quickened, or, in other words, the mutual action between the blood and oxygen be increased, more blood corpuscles will be consumed in a given time.

Although the temperature of the body is nearly the same in all parts, in consequence of the metamorphosis of the tissues constantly going on, yet the temperature of the lungs is slightly higher than that of the other parts of the system, which may be accounted for by the more energetic action of the oxygen on the mass of blood in these organs, than in other parts of the body.

Now, Andral and Gavarret observe that, in all stages of phthisis, analysis of the blood shows that the fibrine is always on the increase, and the corpuscles on the decrease; but that this increase and decrease vary proportionately with the progress of the disease. Liebig states that it must be received as an undeniable truth, that all the organic nitrogenized constituents of the body are derived from protein, when we reflect on the development of the young animal in the egg of a fowl, where, out of the albumen, feathers, claws, globules of blood, fibrine, membranes and cellular tissue, arteries and veins, are produced. Now, this albumen contains, for the quantity of nitrogen present, exactly the proportion of carbon required for the formation of these tissues!

Let us, for one moment, look into the nature of tubercle. Chemistry has thrown little light on its mode of formation. Simon states that it might be regarded as protein from which a portion of carbon and oxygen have been removed; or, to speak precisely, it may be supposed to be derived from protein, which substance has lost, during the transformation, three atoms of carbon, and one of oxygen. The formula is—

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Tubercle	43	35	6	13
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From the observations previously made, viz., that the more corpuscles there are, the less in quantity is the fibrine; and from the experiments of Andral and Gavarret, that the blood in phthisis contains more fibrine and less corpuscles; and, moreover, recollecting that the temperature is somewhat greater in the chest than in other parts of the system, probably because a more energetic action of oxygen takes place in these organs,—it would appear fair to conclude from these facts, that in phthisis the combination of oxygen and carbon, in the lungs especially, is more active than in the normal state. Now we will say one word concerning the *remedies* employed and found most beneficial in this disease. They, for the most part, may be arranged under two heads, first—general tonics; secondly, those compounds which contain large proportions of carbon, such as cod-liver oil, naphtha, &c., &c. It cannot be doubted that the remedial efficacy of the latter class mainly consists in their readily giving up their carbon, and we have shown a great want of this element in the tubercular deposit. We may also add, that in this disease all the adipose tissues of the body are almost become emptied.

In one case of phthisis, where the blood had been analysed in a patient who had taken cod-liver oil, it was found that the fat, when isolated, smelt strongly of the volatile fatty acid of the cod-liver oil; and, moreover, that the solid constituents of the blood were observed to be of a very large amount.

So far so good—both theory and practice agree; but it appears to me, that no cure can be expected from such a class of agents. They, no doubt, preserve the body from being so rapidly burnt up, but this is all we can possibly expect them to do. We do not get at the root of the evil, or at what is the primary cause of the tubercular deposit. Now, if tubercle be protein, with a deficiency of carbon, there appears to be some reason for supposing, that in this peculiar diathesis the elements of the organism do not adhere together with that degree of tenacity which constitutes normal health. Liebig says there is nothing to prevent us from considering the vital force as a peculiar property, which is possessed by certain natural bodies, and that this force is continually being opposed in the organism by a chemical force; and by the action of this chemical force, a separation of part of the body, in the form of lifeless compounds, begins; and if, from any cause whatever, the resistance of the vital force diminishes in a living part, the change of matter increases in an equal degree. In the vegetable kingdom, the resistance of the vital force is sometimes shown very powerfully, when we perceive leaves charged with turpentine or tannic acid resisting the affinity of oxygen for these compounds. On the

other hand, when this force is lessened in the organism, we need not be surprised at great abnormal changes necessarily occurring. Again, the same author observes that the absorption of oxygen occurs only when the vital force of living parts is weaker than the chemical action, and that animal life may be viewed as determined by the mutual action of opposed forces; that the increase of the body is effected by the vital force, and the waste of the body by the chemical action of oxygen; and that the condition of the body which is called health, results from an equilibrium among all causes of waste and of supply. Now, I think we have evidence, that, in this peculiar condition, the carbon of the body is too easily acted upon by the atmospheric oxygen, and therefore, that the balancing operation which takes place in the transformation of protein into carbonic acid, uren, water, &c., which constitutes health, is so far overturned, that a larger quantity of carbon is removed in proportion to the amount of nitrogen and hydrogen, which, in the healthy functions, are carried away by the kidneys, liver, skin, &c.; hence these latter elements, not being taken away by their proper emunctories, combine in certain definite proportions, and constitute the deposit known by the term tubercle.

In seeking, therefore, to discover a remedy for this disease, our object ought to be to ascertain whether there are any agents dietetic or medical which could prevent this too quick transformation. In making this inquiry, we must first observe, there can be no question that the victims of this disease are chiefly taken from amongst that class of individuals whose general tone of system is lowered, as occurs among the pampered and over-protected children of fortune, or in those living in confined and unhealthy atmospheres, &c. &c. A remarkable fact exists, strange as it may appear, that in consumptive families the most dissipated and irregular in their habits, and those who have habitually exposed themselves to many of the causes liable to engender this diathesis, have yet frequently enjoyed longevity; whereas, in the same families, the most virtuous, and those who have guarded their lives with the greatest care and prudence, have fallen early victims. Hence, it is an interesting matter to ascertain how far alcoholic drinks, in this disease, preserve those constitutionally predisposed from these direful results. I think it is agreed, that alcohol, like all other highly carbonized substances, does supply a certain amount of pabulum for the blood. Now, does it act in any other way? Does it at all prevent that disposition to oxidation on the part of the organism of which we have spoken, and thus, by making the protein compounds less ready to combine with oxygen, render them less likely to be easily broken up? That it has this property out of the body is very evident, and may it not have an equal power when taken internally? There can be little doubt that alcohol is taken up and circulated in the system, primarily, as alcohol, yet its elements ultimately become separated—its carbon and hydrogen are given off as carbonic acid and water; for Liebig could not detect, either in the expired air, or in the perspiration, or in the urine, any trace of alcohol after indulgence in spirituous liquors. By the use, therefore, of alcohol, a limit must be put to the change of matter in certain parts of the body; for the oxygen of the arterial blood, which, in the absence of alcohol, would have combined with the matter of the tissues, now combines with the elements of the alcohol—the arterial blood becomes venous, without the substance of the muscles, &c., having taken any share in the transformation. Thus, we perceive, without the manifestation of a corresponding amount of mechanical force, the heat of the body increases after the use of wine. We have here some explanation offered to account for the dark, venous, bloated countenance of the man who lives freely; and we may contrast it with the florid, arterial hue, so characteristic of the countenance of the phthisical patient. In the former case, we have the system surcharged with carbon—in the latter, the arterial blood becomes too highly oxidated. Is it not then fair to conclude that alcohol acts in the first place, by preventing quick oxidation of the tissues, and then, becoming decomposed, it supplies carbon? And if this be so, would it be attempting to carry out a principle too far, supposing that the peculiar acuteness, if not vigour of intellect, which is so strongly observable in the phthisical patient might depend upon hyper-oxygenation of the blood circulating in the brain?—just as we know a temporary exhilaration of the spirits seems to be caused by the inhalation of oxygen gas. On the other hand, it is equally well known that a sluggishness, both of mind and body, is a necessary attendant on the beer-drinker, which most probably may be accounted for by the too carbonized

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state of his blood. It has been found in prisons that men are admitted, apparently in good health, and remain so for some months; that they then become dyspeptic, fall off in health, and die of tubercular consumption, running through all its stages in a few months, and even, in some cases, in a few weeks. And I believe I am not wrong in stating that four-fifths of the deaths in prisons are the result of tubercular disease.*

It may be observed that, as regards diet, cleanliness, regular habits, and an equalized temperature, the greater part of them were infinitely better off than before conviction. The only cause likely to be detrimental to health, would be the effect produced upon the mind by restricted liberty and prison discipline. Now, I may state, that with scarcely a single exception, these men have been throughout life more or less drinkers. The prison fare, however, does not permit the smallest allowance of alcoholic stimulus, unless specially ordered by the medical officer. Here it will be interesting to inquire, whether the loss of this agent has anything to do in producing the tubercular diathesis? I might also state as a remarkable circumstance, that at the *post mortem* examinations of the convicts during the last five years which I have attended, every body examined, no matter how death had occurred, had tubercular deposits, in one or more organs, with the exception of one man who died of epilepsy. Again, no class of men, on an average, take more stimulants than innkeepers, or the old-fashioned but now almost obsolete coachman. To this number I might add butchers, who, besides consuming large quantities of animal food, generally also drink freely; as well as men employed at breweries. Whether statistical evidence may prove or disprove the fact, I am strongly inclined to believe, from a recollection of cases, as well as from their general appearance, which is familiar to all people, that they are not liable, but rather the reverse, to tubercular diseases. If the inference be correct, from these and other similar illustrations which might be quoted, it would appear that alcohol, although most injurious and destructive, by producing multitudinous diseases, yet may it not in this instance act as a kind of preservative, by protecting the organism from the action of oxygen, which we believe we have shown to be the immediate cause of the deposition of tubercle? If this be so, could not some chemical agent be discovered, which would have a protecting, but not otherwise destructive, agency? For instance—I merely propose it as a theoretical suggestion—would tannic acid, combined with some highly carbonized substance, and a moderate supply of alcoholic beverage, or some such compound, have this protecting influence? I think it likely that if any such agent be ever discovered, it will be found amongst that class which have a like preservative property when used extrinsically to the body.

In Hasse's work, edited by Dr. Swaine, it is stated, "for the most part this disease is traceable to a catarrh, which, after a first attack, leaves perhaps but a slight cough behind, but, on frequent repetition, gradually and irretrievably lapses into confirmed phthisis; or the disease, almost equally often, sets in with hæmoptysis." If the author means by this the commencement of the disease, I cannot agree with him. I regard these symptoms as quite of a secondary nature. Although I am well aware that tubercular disease of the lungs has been considered the result of inflammation, yet I am disposed to believe that this is erroneous, and that tubercle is deposited in consequence of a peculiar state of the system, in which the transformation of the tissues has not been carried on in perfect equilibrium; and that when deposited, the tubercle may, and often does, remain for a longer or shorter period, without creating much local inconvenience or disturbance. This will, however, greatly depend on the amount deposited, and on its rapidity, as well as on other collateral circumstances; and the catarrh, inflammation of the lung, pleurisy, hæmoptysis, &c., are entirely dependent on the mechanical irritation caused by the presence of tubercle. I am strongly of opinion that the deposition of tubercle may be much more general than is usually believed, not necessarily shortening life, or perhaps inducing ill-health; but I think it both possible, and very probable, that whenever the vital tonicity is sufficiently lowered, this deposit might take place in any organ. Dr. Carswell thinks it possible that tubercle may be re-absorbed; and, if deposited on the mucous membrane of the air passages, or of the bowels, I cannot see why it may not be thrown off and ejected, as any other foreign matter.

* Mr. Milner, Surgeon to the Wakefield Convict Prison, authorized the above observation.

Dr. Addison, having examined with a lens many apparently healthy lungs, absolutely found tubercles deposited more or less abundantly in one-third. From a perusal of Laennec's work, it seems evident that, although he had by no means satisfied himself as to the mechanism of the formation of tubercle, yet there appears little doubt he regarded it as a deposit taking place from some unknown cause, and he appeared strongly averse to the opinion that it was the result of inflammation. M. Louis alleges, that, with one single exception, he never found tubercles in any other organ without their existing in the lungs at the same time, insomuch that he seems positively to consider their presence in the lungs as essential to their development in other parts. I am disposed to believe that tubercle may be deposited in any part where metamorphosis of tissue occurs; yet I think it more likely to happen in the lungs, in consequence of a more full and energetic action of oxygen taking place there, than in any other parts of the organism. Hasse says that, in that acute form of tubercular phthisis which often proves fatal in the third week, the vital symptoms are very peculiar, bearing so close a resemblance to those of typhus fever, as to lead to mistakes, and the diagnosis can only be ascertained by the stethoscopic sounds? In corroboration of these views, I examined a man at the Convict Prison, who had been ill a few days, and diagnosed the case typhus. He lived about a fortnight, and on a post-mortem examination, the whole of both lungs were completely studded with tubercles, which had not yet formed communications with the bronchi, and tubercular deposits were found also in the abdomen and head. The late Dr. John Taylor, of University College Hospital, informed Mr. Milner that he had seen two similar cases, and that in both the disease at its commencement had been considered to be typhus. Now I regard these cases as the result of a very marked deficiency of the vital force. Hence, during a very short period, the protein compounds were so rapidly acted upon by the atmospheric oxygen, that the disease began and finished in the course of a few weeks—indeed, the rapidity and extent of the tubercular deposit are so great, that patients absolutely die before the disease has extended further than simple deposition. As some proof of the views I entertain, I will relate one or two instances which have occurred immediately under my own eye; but as many of the individuals spoken of are at present now living, I cannot, of course, furnish names.

1st.—A family consisting of five sons and one daughter; all appeared to enjoy good health up to about eighteen. Out of this family, three sons died between the ages of eighteen and twenty-five, of phthisis; the daughter is still living, although in very precarious health, evidently phthisical. All these were steady, industrious, and peculiarly careful of their health. The two remaining sons, now between thirty and forty years of age, when last heard of, were quite healthy. Early in life, these two latter men were of dissipated habits, and lost many situations in consequence of their propensity to drink. One of them, at the early age of nineteen, came over from India with an inflamed liver and dropsy, from spirit drinking; he was many months ill, but ultimately recovered. When last seen they were in robust health, but had bloated countenances.

2nd.—A family consisting of three sons and three daughters. They all had the characters of the scrofulous diathesis strongly marked—fair hair, clear complexion, blue eyes, thick lips, &c. The three daughters died of phthisis before the age of thirty; one son of tubercles of the brain—the two remaining sons are still alive, of irregular habits, but in apparently good health.

3rd.—A young man at the age of eighteen showed every symptom of approaching tuberculosis; he had already lost one brother and sister by phthisis. His medical man advised him to relinquish a profession of a sedentary nature, in consequence of the above facts. He did so, but unfortunately became dissipated. He is now alive, about forty years of age, a confirmed drunkard, and has suffered several times from delirium tremens.

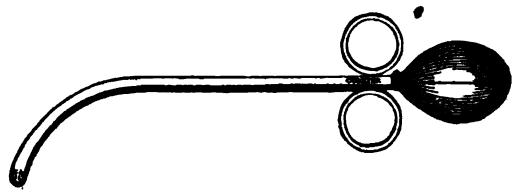
We gather, therefore, from the foregoing observations, that tubercular deposits are eminently dependent, as the primary if not the sole cause, on a diminution of the vital force.—2ndly. That in phthisis the body is rapidly consumed by the combination of its elements with oxygen.—3rdly. That the consumption of the body may be retarded by the ingestion of certain highly carbonized substances, as cod-liver oil, &c.—4thly. That it is probable the rapid oxidation of the body may

be checked, or entirely prevented, by the use of alcohol, or of some agent acting in the same way.*—*Lancet, December* 4, 1852, *p.* 515.

24.—ON THE APPLICATION OF NITRATE OF SILVER TO THE FAUCES AND LARYNX.

[A variety of methods have been adopted to apply nitrate of silver, either solid or in solution, to the fauces and larynx. We subjoin a description of an instrument made by Mr. Coxeter. But we confess that we should prefer the old method of a bit of sponge tied to the end of a bit of whalebone. We have seen and described several methods of applying the solution to the larynx; but we would warn the practitioner to be very cautious how he adopts this method, for fear of suffocation. There is no doubt, however, that if nitrate of silver could be safely and easily applied to the laryngeal and bronchial surfaces, it would have a wonderfully beneficial action, as it has upon all mucous surfaces.]

Mr. Coxeter's Laryngeal Shower Syringe is by far the most convenient form in which a syringe can be used for these applications to the interior of the throat and the posterior nares. It consists, as seen in the sketch, of a seamless tube, composed of silver—not unlike that of a medium-sized catheter. It is curved in a form



suitable to its intended uses. The distal extremity is somewhat flattened from side to side, and is perforated by fine openings, which admit of the emission of the contained fluid in the form of a delicate shower. The proximal extremity is fitted with an elastic suction-bottle, which, by its own action, charges the instrument with the fluid, which is then emitted by simply compressing the bottle with the thumb. Rings are attached for holding the little instrument, and an ingenious arrangement is made, by which the quantity of fluid ejected can be accurately regulated. The inventor says that his shower syringe possesses the advantage of applying gently, and without friction, to an irritable surface, the remedial agent intended to be employed. It does this more generally and uniformly than the sponge, and is entirely free from the risk to which the latter, in becoming detached from the whalebone, is liable. Our experience in the use of the instrument entirely corresponds with this favourable report of its inventor.—*Lancet, Jan.* 22, 1853, *p.* 85.

25.—AFFECTIONS OF THE BRONCHIAL MUCOUS MEMBRANE IN CHRONIC RENAL DISEASE.

By Dr. George Burrows, F.R.S., and Dr. W. Sankey Kirkes.

In the course of chronic disease of the kidneys, the several great mucous and serous membranes are exceedingly prone to become seriously affected. The affection of the mucous membranes is manifested in various disturbances of their ordinary functions, and occasionally in an inflammatory process of a more or less severe and protracted kind, attended usually with a copious discharge from their

[* The reader will find some very interesting remarks on Tubercular disease in Mr. Simon's lectures on Pathology, some of which we have abstracted in former volumes. Mr. Simon especially confirms the statement here made by Dr. Atkinson, that the more *venous* the blood, the less disposed to tuberculosis: and the more oxidized it is the more disposed to deposit tubercular matter.]

surface. The affection of the serous membranes consists chiefly in the accumulation of fluid within their cavity, and occasionally in a low but often fatal inflammatory process. There seems to be sufficient reason for believing that the affections of the mucous and serous membranes, as well as many other secondary complications occurring in the course of chronic renal disease, are due, in a great measure, to the disordered state of the blood which the structural affection of the kidneys engenders; for in nearly all confirmed cases of renal disease the respiratory and gastro-intestinal mucous membranes present signs of being more or less disordered, and the tendency to effusions and inflammations within the different serous cavities is more or less strikingly manifested. The affection of the respiratory mucous membrane is shown in the almost habitual catarrh to which the victims of renal disease are subject; that of the alimentary mucous membrane in the nausea, vomiting, and disordered bowels so common in this disease; and when the disorder of either of these great mucous membranes runs on to inflammation, the profuse discharge which, in such case, often takes place from the affected surface, may with reason be considered to result from a natural effort to remove in this way from the system certain injurious materials which, in consequence of the disease of a great excreting organ, have accumulated within the blood. For, although the mere process of discharge may be productive of serious distress and debility, yet it not unfrequently happens that, after such free secretion from a mucous surface, the dropsical effusion which previously existed becomes greatly diminished, and various cerebral and other symptoms, indicative of the circulation of urea in the blood, subside or are removed. And it seems likely enough that the relief in such cases is due to the elimination of some of the morbid materials of the blood along the mucous surface from which the free discharge has taken place. The probable correctness of such an opinion is supported by the almost constant disorder of the gastro-intestinal mucous membrane, manifested in nausea, and vomiting, and profuse diarrhœa, which ensues when, from accident or experiment, any noxious organic materials are received into the blood. Examples of this occur after the absorption of foul gases, or the injection of putrid matters into the blood-vessels of animals, also in puerperal fever with uterine phlebitis, and in the typhoid or extreme hectic condition when gangrene is going on. That the affection of the mucous surfaces in chronic renal disease is dependent on the permanently-abiding disorder of the blood, and not on a mere temporary or accidental cause occurring in the course of the disease, is made probable, too, by the very obstinate and protracted nature of the mucous affection, by its liability to relapse independent of ordinary exciting causes, and by its frequent persistence in a chronic form long after the violence of its first attack has been subdued. Chronic catarrh and chronic diarrhœa, with occasional vomiting, are noted among the most common and troublesome of the secondary affections of renal disease, and their obstinacy and intractableness are probably in a great measure due to the fact, that the cause which gave rise to them is of a permanent and not a transitory kind, and dependent on a general morbid condition of the blood, and not on any circumstance acting only locally and temporarily on the affected membrane.

The constant discharges which in some cases take place from the bronchial and intestinal mucous surfaces, do not usually leave any structural changes discoverable in these membranes after death, but occasionally there is distinct evidence of ulceration of the intestinal mucous membrane, usually of a dysenteric kind, and affecting the large intestine. It may admit of question whether the dysenteric ulceration in such cases is a mere accidental complication, independent of the primary disease of the kidneys, or, as seems more probable, results from the direct irritation of an unusual and probably acrid secretion continually eliminated from the affected surface.

It is not common for both of the great mucous membranes to be simultaneously affected to any considerable extent in renal disease; for although each of them is usually somewhat disordered, yet, generally speaking, the principal mischief is limited to one, and rarely leaves it to attack the other. Thus, when the brunt of the affection falls upon the bronchial mucous membrane, it is unusual for it to leave this surface and attack that of the alimentary canal; and the same persistence of the affection in the membrane first attacked is observed when the alimentary mucous tract is the main seat of the secondary affection. When either mucous membrane is seriously affected, and free discharge takes place from its surface, it usually

happens that the tendency of the disease to kill by dropsy or cerebral disorder is kept in abeyance, though death not unfrequently arrives in consequence of the prolonged distress and exhaustion resulting from the perpetual drain from the affected mucous surface and the attendant disorder of its own proper function as a respiratory or alimentary organ. It may be observed, too, that affections of the mucous membranes, especially of the respiratory tract, are not limited to any particular stage of the disease, being as common in a first attack of febrile dropsy, or dropsy after scarlet fever, as when the disease is thoroughly confirmed, or advanced to its last stages.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 8.

26.—*On the Local Application of Cod Liver Oil.—Ol. Morrhuæ.*—In Sweden cod-liver oil has for some time been employed as an external application in the treatment of cutaneous maladies, and from that country it has recently been introduced into English practice. We have had frequent opportunities of watching its effects as prescribed by Mr. Paget, in the out-patients' room of St. Bartholomew's Hospital. The class of cases for which it appears most applicable, is that of chronic eczematous eruptions, unattended by acute inflammation of the skin or general pyrexia. In abating the troublesome itching which frequently accompanies this disease, especially in old people, it has manifested powers decidedly superior to those of any other application with which we are acquainted. In the majority of instances it can, of course, only be expected to assist constitutional treatment, not to supersede it.

We have as yet had no opportunity of forming an opinion respecting the proposed inunction of the oil in cases of phthisis, where the stomach cannot take it. Whilst on this subject, however, we feel inclined to strongly recommend the practice of exhibiting it *simultaneously with tonics*, as iron, quinine, &c., which is now adopted with great success at several hospitals. The digestion and assimilation of the oil appears to be much aided by such combination. In the treatment of cutaneous struma and lupus at the Hospital for Skin Diseases, it is usual to administer along with the oil small doses of mercurials, which are often continued for many months. The success attending this practice is very great, and appears to much exceed that which results from the administration of either drug alone.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 23.

27.—ON THE USE OF TRACHEOTOMY IN CROUP.

By Henry Smith, Esq., Surgeon to the Westminster General Dispensary, &c.

[Is tracheotomy of any effect in the inflammatory exudations of the air passages in young children? Eminent medical men differ in opinion, and the question is still an open one. In France it is much more successful than in England. This is accounted for, by the disease in that country being rather different in its nature (in France it is generally seated high up in the windpipe), and by the earlier performance of the operation. In three cases in which Mr Smith has performed the operation in croup occurring in children, no benefit was in any of the cases derived from it. In the first case, the patient was a little boy two years old. All the violent symptoms of croup were present, but had manifested themselves within thirty-six hours. As the usual remedies had failed to procure relief, tracheotomy was proposed.]

The patient was accordingly placed upon a table, in a good light, its head was supported by a pillow, and its neck extended. I made an incision over the lower portion of the trachea, a little more than an inch in length, quite in the median line. As I cut through the skin and cellular tissue, fortunately very cautiously and slowly, a vein as large as a crow-quill, and distended to the utmost, rolled away from the point of the knife. This being avoided, the knife was carried deeper down between the muscles, until the fascia covering the trachea was exposed. Close upon the tube was another large vein. I was, therefore, obliged to use the knife with the utmost caution, whilst Mr. Tinney held the parts asunder with two blunt hooks.

Some three or four minutes were thus consumed, but fortunately there were not more than a few drops of blood lost. However, just as the trachea was being exposed, the child suddenly gasped, fell back, and its breathing and heart ceased their functions. Without further delay the point of the knife was dashed into the trachea, and, at the same time, Mr. Tinney vigorously inflated the lungs by the child's mouth, and after a minute of great anxiety on our part, we saw the act of respiration feebly attempted. The process of artificial inflation was then repeated and carried on for half an hour. By this time the heart had begun to beat perceptibly, and the breathing was resumed with comparative frequency, and at the termination of an hour the child became perfectly sensible, and took some brandy. By this time we had managed, with great difficulty, to introduce a silver tube into the trachea; but as this did not suit well, I substituted a portion of gum-elastic catheter, which served admirably the purpose intended. This was tied in, and the child well wrapped up, placed near a good fire, and wine and beef-tea were given every now and then in small quantities.

At 3 p.m., to my great astonishment, the little thing was doing admirably; it was apparently free from distress, and breathing with ease; its face was of a natural colour, the pulse good, and the surface warm. Strict orders were left with the nurse to clear the tube if it became obstructed by mucus.

At 6 p.m., Mr. Tinney saw the child, and reported that he was still going on most satisfactorily. At 8 p.m., this gentleman was suddenly summoned, and found the child, on his arrival, dead. It appears that up to this period he had been apparently doing well, when suddenly he became distressed, turned his head from side to side, and then ceased to breathe.

On *post-mortem* examination we found that the whole of the trachea was lined with a thin film of false membrane loosely adherent to the tube. It reached as far as the bifurcation, but did not extend into the bronchi. The lungs were healthy, with the exception of some congestion at their posterior and lower portions, and there was a considerable amount of mucus seen when they were cut across. The larynx was free from disease. The opening in the trachea was just below the isthmus of the thyroid gland.

The next case was detailed at length in the 'Medical Times and Gazette' of last year, as it presented a feature of special interest, from the circumstance of its having been the first instance in which chloroform was given during the operation of tracheotomy. It is necessary for me to give the particulars again.

Case 2.—I was requested by Mr. Welsh, of Blackmoor-street, at 2 p.m., on August 12, to perform tracheotomy upon a little girl, aged 4, who was suffering severely from croup. It appeared that the child had been taken with the premonitory symptoms more than a week before; and that four days previous to my seeing her, decided signs of croup set in. Various remedies were used, but the child became worse, and when I saw it, was apparently in danger of speedy dissolution. There was excessive difficulty in breathing; there was hardly any expansion of the chest, but great labouring with the extraordinary muscles of respiration; and a very feeble pulse. I had the good fortune to be accompanied by Dr. Snow, and by that excellent surgeon Mr. Wiblin, of Southampton, who agreed in the propriety of the operation. Dr. Snow also consented to try chloroform. Accordingly the little girl was carefully put under its influence, when the breathing became more tranquil, and I proceeded to perform the operation. This affair happened to be most tedious, for I very speedily cut through a large vein at the root of the neck, which bled profusely. However it was effectually controlled, and I opened the trachea, and introduced a piece of gum-elastic catheter. It was necessary to be very cautious in preventing the child from suffocating, as immense quantities of mucus were ejected by the wound. Great irritation continued for about half an hour, but during this time the wound was kept well open by two blunt hooks; and in one of the violent fits of coughing, a long portion of false membrane was partly ejected by the wound. This was drawn out by the forceps and removed; after this, the irritation ceased in a great measure, and the child was able to take some wine-and-water.

Two hours after the operation, she was breathing with tranquillity, and had taken nourishment. There were, however, at intervals, some severe paroxysms of cough, accompanied with ejection of quantities of mucus, which came through the tube.

Two minims of liq. opii sed. were ordered to be given to the child the last thing at night. Small quantities of beef-tea and wine were exhibited.

August 13, 10 a.m.—The child has passed a very fair night, and now breathes with tranquillity; the air passes very freely through the tube, and the chest expands well. There is, however, a great deal of inflammatory œdema of the neck in the region of the wound. There is very little cough and irritation. She takes nourishment well.

8 p.m.—The child has been lying in a partial state of stupor during the whole day, but has not been distressed in its breathing. This evening, symptoms of sinking are manifest; the pulse is quicker and more feeble, and there is a difficulty in getting the patient to take nourishment. From this time she got gradually worse, and died at 2 a.m. on the 14th, thirty-six hours after the operation.

On *post-mortem* examination, I found the following appearances:—The inner surface of the epiglottis and larynx was studded with a white filmy deposit, while the trachea was lined, in its entire length, by a thick false membrane, and this croupy deposit was found to descend into the bronchi, even into the lower ramifications of the same. The lower and posterior portions of the lungs, especially on the right side, were a great deal congested, but their superior and anterior portions were in a pretty healthy condition. On peeling the false membrane from off the trachea, its inner surface was found to be in a very inflamed state. The brain was remarkably firm, and there was not any great congestion or any fluid in the ventricles. I had made the incision quite in the central line, but the knife had cut through the isthmus of the thyroid gland.

Case 3.—I was requested by Mr. Collins, of Mornington-place, Hampstead-road, at eleven a.m., Dec. 28, 1848, to open the windpipe of a little patient of his, aged eleven months. On visiting the case I found the child apparently dying from impaired respiration; this function was carried on with extreme difficulty; the alæ nasi were hard at work; the face was livid, and the inspiratory efforts were accompanied with a peculiar shrill noise, not precisely the noise of true croup. The child had been attacked with measles some three weeks previously, and had been progressing favourably until the 25th of December, when symptoms of inflammation about the upper part of the windpipe came on. On the 27th dyspnœa became marked, and on that evening the peculiar sound before spoken of was first heard; it was more like that of a railway whistle than anything else. Mr. Collins adopted the ordinary remedies for such symptoms, but they increased with rapidity, and on the morning of the 28th, threatened to be fatal. That gentleman strongly expressed his opinion that the disease was seated in the larynx principally, and for this reason he thought that tracheotomy might save the child's life. I acceded to his wish, and having placed the child on a table, its head and shoulders propped by a pillow, I made an incision about one inch and a half in extent, in the median line of the lower portion of the neck. On getting down to the trachea, and as I was cutting through the fascia which covered it, I laid open a vein, which bled very freely, and rendered the last steps of the proceeding most troublesome. However, I opened the windpipe, and with great care prevented any blood getting into it. A piece of gum elastic catheter was introduced and fixed in; some wine and water was given. The breathing at once became more free; the eyes and face of the little child became remarkably changed for the better, and the pulse rose in volume. I stayed with it some time, when finding the improvement continue, I left, after having given small quantities of beef-tea and wine, and ordered an enema of the same to be exhibited.

At 3 p.m. Mr. Collins saw the child. Up to this time it had been breathing with tranquillity and without difficulty, but a change for the worse had set in; symptoms of sinking appeared, and they continued getting worse until 5 p.m., when death took place, six hours after the operation.

Post-mortem.—The pharynx and upper portion of larynx were both lined or studded with a thick deposit of lymph; this was especially observable about the epiglottis and in the ventricles of the larynx; but the whole of the trachea was free from any semblance of the disease. The lower portion of each lung was hepatised. In my operation I had cut through the third, fourth, and fifth rings of the trachea.

Although in each of these cases the ultimate result of the operation was the

same, there is presented in them a difference as to the nature and the severity of the disease for which the individual operations were put in force, as well as the amount of benefit which was produced by them. In the first case detailed there is presented to us an instance of croup which had run its course with extreme rapidity, and which was accompanied by symptoms of great severity. It was a case in which the operation appeared to be the only resource left. So exhausted, indeed, was the little patient, that the shock of cutting through the tissues, with scarcely any loss of blood, apparently destroyed life. But after the trachea was opened, the child was revived from a seemingly hopeless condition, and an extraordinary improvement was the result. It seemed as though this improvement would go on, when, from some cause or other which could not be ascertained, the patient was suddenly asphyxiated. Possibly the tube may have become blocked up, and the nurse may not have cleared it in sufficient time. It was evident that death was from sudden asphyxia.

On the *post-mortem* examination, it was found that there was no reason to regret that the operation had been done, for the appearances indicated that it was a case where tracheotomy might give a fair chance of life. The false membrane was neither thick nor closely adherent, nor did it extend into the bronchi, and the lungs were comparatively free from disease.

In the case next detailed, there are striking differences in many points. The disease had existed for a much greater length of time, and the symptoms were by no means so distressing as in the first instance. The operation gave not only the same temporary relief, but the relief which was given was prolonged to a much greater period of time, the patient having lived thirty-six hours after it. Yet, on *post-mortem* examination, it was found that the disease had existed in its most intense form, the false membrane being very thick, and being extended into the ramifications of the bronchial tubes. It is in this condition of the disease that there can be so little hope of tracheotomy doing any good; and it is surprising that so much relief was given, and life saved so long. Moreover, in this instance, the operation itself was long and tedious, and there was a considerable loss of blood; while, in the case before detailed, the operative process itself was very much more quickly accomplished, and there was scarcely any loss of blood.

In the third case, the difference which obtained is in reference to the nature of the disease. In the two former, the affection was the ordinary inflammatory croup, the seat of it being the lower portion of the principal air-tube. In this instance, however, there is presented to us that species of croup termed by the French authors "diphtherite," which consists essentially of a deposit of inflammatory exudation in patches upon the upper part of the windpipe, upon the epiglottis, superior portion of larynx and pharynx, the trachea being free. This is the form of disease in which it is stated that the operation of tracheotomy has been most successful; and there is reason to believe that it would be so in consequence of the trachea and larger bronchi being free from the deposit. This disease, however, is for the most part the result of an attack of measles; and it is extremely likely that the lungs are, or have been, in a state of inflammation. In all probability, it was the existence of inflammation of the lungs that rendered the operation of no ultimate avail in this case.

This subject of tracheotomy appears to myself to be surrounded with many difficulties. Should the operation ever be performed or not in croup, is a question, which, perhaps, may be legitimately asked. If men of great experience are appealed to, it is difficult to get any satisfactory answer. The question could only be met by a reference to the data of the operation, which, however, have not been put together. My own feeling on the matter is, that the surgeon is placed in a most trying situation when called upon to perform this operation. He is urged on by the parents of the child to resort to any measure which may give a chance of relief to the great distress from which they see it is suffering. He feels that there is no hope for it if the operation is not done, and yet he cannot avoid the conviction, that he is resorting to a desperate measure. At the same time, he does not like to throw away this last chance, which may save the life which is already in such extreme danger.

This state of mind must make one undecided and timid, and possibly a case occurs where the result has made the surgeon repent that he had not given his

patient this last chance. In other instances besides those above related, the question as to the propriety of this operation has been pressed upon me. The most instructive was the following:—

Case 4.—I was suddenly summoned, at 10 A.M., on the 9th of February, to a child, aged three, the father of the patient stating that it had been attacked with a fit of difficulty of breathing, and that he expected it would be dead before he could get to his house. I at once proceeded with him, taking my instruments. On arrival I found that the child had recovered from the paroxysm, but was told that he had been fighting for breath and had grown black in the face. He was now breathing with difficulty, and had all the symptoms of disease in the upper part of the windpipe. On looking into the mouth, the fauces and tonsils were seen studded with a deposit. The child had had measles about two weeks previous, and afterwards inflammation of the lungs, which had been actively treated, and had been subdued. It was evident that the deposit had involved the upper part of the larynx; still the symptoms did not appear to me to justify an operation, for which the parents were rather anxious. I ordered a blister to the throat, and recommended some wine and water, and at the same time desired the parents to watch the child narrowly. I saw the child in four hours afterwards, and found it in much the same condition, but rather lower. However, he was enabled to sit up in his mother's lap. At 9 P. M. the child had a sudden fit of dyspnœa, and died before there was a possibility of getting to it.

I examined the body next day. The back part of the tongue, the fauces, and pharynx were studded with the inflammatory deposit. The opening of the glottis was obstructed by tenacious mucus, and on clearing this away I found the same kind of deposit as existed on the fauces studding the inner surface of the upper portion of the larynx, but leaving the trachea free.

Now, on seeing this case at first, I felt that in all probability tracheotomy would be required, yet the condition of the child did not appear to me to be sufficiently bad, notwithstanding the parent's description of the attack of dyspnœa; and, although strongly tempted to perform the operation, I allowed myself to defer it until the symptoms should become worse. The result of this indecision was shown. The examination after death too surely proved that the little child had become suddenly asphyxiated, and that tracheotomy might have saved life. This, at least, was the remedy indicated. Moreover, the disease was of that form in which the operation has been shown by the French practitioners to be so much more likely to be attended by success than in ordinary instances of inflammatory croup, and it must be confessed that I could not divest myself of the idea that a little more decision on my part might have prevented the fatal event.

Although I am straying from the strict subject of this communication, I will refer briefly to another condition in which tracheotomy is sometimes called for. I am alluding to those instances where young children have been affected with scarlatina; and where, after the acute stage of the disease has subsided, life is suddenly placed in imminent danger, by rapid enlargement of the cervical glands. It must have occurred to those practitioners who have attended much among the poor children of large towns to have seen this, and it is now and then observed in that class of life where there is want of neither wholesome food nor pure air. In such a case the cervical glands enlarge to such an extent, that great pressure is exerted upon the windpipe, and the child is placed in imminent danger of being suffocated. It is then that the propriety of tracheotomy is suggested to our minds; and it is impossible to attend one of these cases without seriously thinking of this. Unfortunately, however, it happens that the pressure is exerted upon the œsophagus or pharynx at the same time, and that the patient is unable to swallow. If such be the case, it will only add to suffering to perform the operation of tracheotomy; for, even if the dyspnœa is remedied by an artificial opening, the effect can only be beneficial for a short time, if the patient is unable to swallow.

A few weeks ago I was called to a case of this nature, where possibly it might have been a justifiable measure. The patient was a fine little boy, the son of parents well to do in the world; he had had a very bad attack of scarlet fever, the acute stage of which had gone by. On the eighth day, however, some enlargement of the cervical glands on the right side of the neck took place, for which leeches

were used. In the following night there was a sudden change for the worse; the swelling had become in a few hours nearly as large as the fist, and very tense; the boy was much distressed, and breathing with difficulty. I was called to him whilst in this state. I ordered a repetition of the leeches, and small quantities of wine and beef-tea at frequent intervals. In the course of a few hours more the symptoms had increased, the dyspnœa becoming more marked, and he was now able to swallow a very small quantity of fluid, cautiously given in a teaspoon. The question of tracheotomy now suggested itself to my mind, and the parents were spoken to about it; but they were not anxious that it should be done. The symptoms from which the little boy was suffering rapidly became more severe, and he died before night.

In this instance I did not urge tracheotomy, because it was apparent that there was as much pressure upon the pharynx as upon the air-tube; moreover, the boy had been so much depressed by the poison of scarlet fever, that I was fearful he might die during the operation. It is, however, in a case of this nature that circumstances might occur which would render this proceeding perfectly justifiable.—*Med. Times and Gazette, March 5, 1853, p. 244.*

DISEASES OF THE ORGANS OF DIGESTION.

28.—ON MUCOUS MEMBRANE—EPITHELIUM.

Structure of the Bronchio-Pulmonary Mucous Membrane.—In some preliminary observations on the pathology of the bronchial membrane, Dr. C. Black states the result of his examination of the normal membrane. This he describes as consisting of an epithelium; a basement or germinal membrane, on which the epithelium rests; and thirdly, of a layer of simple fibrous tissue, vessels, and nerves, subjacent to the basement-membrane. The epithelial cells are oval, polygonal, nucleated, and have their free surface set with delicate cilia. He believes that the epithelium (contrary to the opinions of some histologists) is prolonged into the ultimate pulmonary cells. If a very thin slice of pulmonary tissue be taken from the surface of the lung, and macerated for a short time in distilled water to decolorise it, and be then examined under the microscope, such cell will be found to have a perfect lining of epithelium.

The basement-membrane is spread out in a thin structureless layer, which is continued into the ultimate air-cells, constituting a part of their walls. Its thickness in the larger bronchi measures from 1-18,000th to 1-20,000th of an inch. It is found studded at equidistant points with small projections, which he regards as the germinal nuclei of epithelial cells. He regards the composition of the basement membrane as similar to that of blood-plasma after coagulation of the latter; that its existence is temporary, and that it is being continually disintegrated at its epithelial surface for the maintenance of cell-growth. The third layer, or the fibrine, consists of white and yellow fibrinous elements. The section of the bronchial membrane, microscopically considered, consists of definite, isolated granular cells, floating in a viscid homogeneous fluid, which latter is the contents of the cells that have already attained their full growth, and have liquified in the natural process of decay. As an accidental, yet almost invariable, constituent of the bronchio-pulmonary secretion, will be found shreds or débris of the cell-walls. The granular cells or mucus-corpuscles (so called), when they have attained their full development, measure 1-1500th to 1-2500th of an inch. In this condition they are isolated, present a dark, well-defined outline, and are more prominent than pus-cells, with which they are frequently confounded.—*Brit. and For. Medico-Chirurgical Review, April, 1853, p. 544.*

29.—THE GENERAL PATHOLOGY AND TREATMENT OF DYSPEPSIA.

Extracted from the Clinical Reports of Professor Bennett.

Our knowledge with regard to the offices performed by the gastric, biliary, and pancreatic juices in digestion has of late years been much advanced. Thus the gastric juice more especially operates on the albuminous, and the pancreatic juice on the fatty compounds of the food. The function of the bile is perhaps more obscure, although it probably acts as a means of precipitating or separating some of the excretory matters from chyme, and so facilitates assimilation of the nutritive portions. Digestion may be deranged by all those causes which too much increase or diminish the secretion of these three fluids. Thus, excess of acidity in the stomach is one of the most common causes of dyspepsia, producing that form of it which accompanies scrofulous and tubercular diseases. It may be in such excess as to neutralise the alkaline action of the pancreatic juice, and render it difficult or impossible to emulsionise fatty matters. In such cases, alkalies, with bitter tonics and the direct introduction of animal oils in excess, are indicated. On the other hand, the gastric juice may be diminished in quantity, as frequently occurs in persons who suddenly overtask the powers of the stomach at feasts, or in old persons with feeble digestion. The sense of load after eating is generally indicative of slow digestion from this cause. In acute cases, a stimulant rouses the stomach to increased action, and hence the moderate use of drams and generous wines after dinner is occasionally useful. In old persons the sense of load and feebleness is best removed by giving up tea, and drinking at night a little weak brandy and water. In chronic cases, acids are indicated, especially muriatic acid. The tr. ferri co. of the pharmacopœia is a useful preparation in chlorotic females. We have no distinct means, as far as I am aware, of rousing the pancreas into action, and yet many cases are on record in which fatty matters have passed undigested through the alimentary canal in consequence of obstruction to the pancreatic duct. In such cases, and all those in which fatty matters are difficult to digest, alkalies, especially the liquor potassæ with vegetable tonics, are indicated. When the bile is deficient, constipation and dyspepsia are usual results, and are to be relieved by gentle mercurial purgatives, with extract of taraxacum, and by remedies, such as rhubarb and especially the compound rhubarb pill, which, by acting on the duodenum, also favour the flow of bile into the upper part of the alimentary canal. Dr. Clay, of Manchester, has recommended in such cases the administration of ox-gall, a remedy which, although not extensively given, is evidently rational, and calculated by its purgative action to be highly serviceable. Excess of bile, on the other hand, ought to be treated by drastic purgatives, diuretics, and diaphoretics, according to circumstances, to cause excess of excretion. Exercise should also be insisted on to call the lungs into action, and thus relieve the liver in its office of separating hydro-carbon.

A derangement of the consecutive and harmonious action of the alimentary canal, is another frequent cause of dyspepsia, for it is as necessary that those portions of the food which are not assimilable should be removed out of the economy, as that the nutritive materials should be absorbed. Hence, whatever impedes the contractility of the intestinal canal, whatever alters the structure of its mucous membrane, or whatever mechanically obstructs its calibre, may always be observed to induce dyspeptic symptoms. The removal of these various conditions, whether by stimulating the nervous centres, by appropriate diet, or by purgatives and astringents as they may be required, need not be more particularly dwelt upon.

In many cases of dyspepsia, two or more of these classes of causes may be combined, so as to render the indications for treatment complex and apparently contradictory. In other cases, one or more causes may exist, although from the indications presented they cannot be determined, when our treatment must always be more or less vague and unsatisfactory. Lastly, there are a few instances where dyspepsia can only be explained by *idiosyncrasy*, in which we find this or that particular article of diet to derange the digestive functions, and in which avoidance of the offending cause is the only plan that is attended with success.—*Monthly Journal of Med. Science, Feb.* 1853, p. 164.

30.—*On the Efficacy of Chlorate of Potash in Ulcerated Stomatitis and Cancrum Oris.* By Dr. J. H. Babington.—[In an epidemic of ulcerated stomatitis which occurred in the Coleraine Union Workhouse, in 1849, the chlorate of potash was used with great success.]

The symptoms were as follows:—The lips, gums, and lining membrane of the cheeks were red, swollen, and tender to the touch; tongue swollen and indented by the teeth, covered over the surface with a foul tenacious coating, and in some places ash-coloured sloughs. There was great pain when the cheeks were moved, touched, or any food introduced into the mouth, together with considerable general fever, and the secretions vitiated.

The first morning I observed the disease, two only complained; next day three more cases were presented; and on the fourth morning I had fifteen on the sick-list, all from amongst the boys in the workhouse.

The treatment adopted was a mild aperient of rhubarb and magnesia, and the administration of chlorate of potash, dissolved in water sweetened with syrup, in doses of four grains every fourth hour; the mouth was also washed with a weak lotion of solution of chloride of soda. They all recovered in about six days. I treated one case with alteratives and tonics, and it was three weeks before it got quite well; thereby proving the efficacy of the chlorate of potash.—*Dublin Quarterly Journal of Med. Science, Feb.* 1853, *p.* 236.

31.—*Chloroform in Sympathetic Vomiting.* By Dr. Thos. Inman.—[For this symptom two classes of remedies are generally resorted to—stimuli, or direct sedatives. One of the most valuable of these is creasote, but on account of its many disagreeable qualities, Dr. Inman suggests chloroform, in the dose of three or four drops, well shaken up with water, to be used in its place. He says]

I do not know whether the suggestion is new, it was forced upon me by circumstances. A friend came to visit us across the sea, and suffered urgently from sea sickness, which continued long after her arrival, to such an extent, that any motion of the body produced vomiting. Not having anything else in the house but chloroform, I gave some of that, and was gratified to find that its success was immediate. The next case was one occurring in the practice of a friend, where the vomiting had been kept up incessantly for three days, and where creasote had been unavailing. The vomiting was partly due to an overflow of bile, and partly to pregnancy: it continued, however, after the flow of bile had ceased, and was beginning to weaken the patient materially. The first dose of chloroform (five drops) checked the vomiting for six hours; there was then a slight repetition of the sickness, which, however, disappeared entirely after another dose.

The next case was one of vomiting from disorder of the liver. The first dose put a stop to the sickness, and had not to be repeated.

My next experience was in the case of the lady I first mentioned, who found it useful in preventing sea-sickness.

I have induced some of my friends also to try it, and they give an equally favourable report concerning it.

Its chief advantages over creasote are, its pleasant taste in the mouth as it goes down, and its not unpleasant flavour if it comes up again. The only point requiring attention is, that the mixture must be well agitated immediately before being taken, as the chloroform rapidly falls to the bottom of the spoon or glass.—*Med. Times and Gazette, March* 5, 1853, *p.* 252.

32.—ON THE TREATMENT OF SARCINA VENTRICULI.

[At a meeting of the London Medical Society, Dr. Hassall, in speaking of the treatment of this affection, said,]

One of the chief indications was certainly to destroy the fungus; and this he thought was to be effected by two means: first, by the regular and systematic exhibition of alkalies, so as to neutralize the acidity of the contents of the stomach, and which acidity formed a condition essential to the development of the parasite;

and, secondly, to administer some remedy capable of exerting a destructive effect on the fungus. With these objects in view, infusion of quassia and bicarbonate of potash were prescribed in mixture, and doses of the sulphite of soda separately, the diet being also regulated. After the lapse of a short time, Dr. Hassall learned, that although the sulphite of soda had not been taken, but only the quassia and bicarbonate of potash, yet a marked and encouraging improvement in the symptoms had taken place, the frequency of the vomitings especially being diminished. Subsequently the sulphite of soda was administered; this remedy, together with the potash and quassia, having the effect of stopping entirely the vomiting for a period of five weeks—in fact, up to the date of Dr. Hassall's communication to the Society. Not only had the vomiting ceased, but the bowels, before so obstinately confined, had become perfectly regular; there was no distension of the stomach, or flatulence; the urine was clear, free from deposit, and passed in normal quantity; exertion does not now cause fatigue as formerly, and the sleep is invariably sound and refreshing.

[Drs. Lankester and Fuller doubted the efficacy of the quassia in the case; and Drs. Fuller and Hare referred to cases which had been completely cured by the sulphite of soda. Dr. Hassall, after some further observations, explained the use of the sulphite by saying, that]

The *modus operandi* of the sulphite of soda in cases of sarcina appeared to be this: The sulphite is decomposed in the stomach by the acids generated therein, and the sulphurous acid gas is liberated, the destructive effects of which upon parasitic formations like the sarcina was well known.—*Lancet, Jan.* 27, 1853, *p.* 120.

[In reference to this subject, Mr. St. John Edwards, of University College, remarks, that acid fluids are necessary to the development of most fungi. The value of the treatment of this disease by the sulphite of soda is:—That by the acid of the stomach combining with the alkali, the sulphurous acid is given off and acts as a poison to the sarcina. The recommendation of Dr. Hassall therefore, that alkalies should be administered along with the sulphite, would tend to diminish the activity of the remedy. Mr. Edwards remarks:]

The only instance of the effect of the coetaneous administration of an alkali with a sulphite that I know of is contained in the following extract from a lecture delivered by Dr. Jenner, at University College Hospital, and published in the 'Medical Times' for Aug. 23, 1851, p. 193. "On account of the burning pain which he occasionally complained of, I now ordered him a mixture containing sodæ carb. ℥ij. in each dose. On the 13th, 15th, and 16th, he again vomited sarcina in quantity, and, as I suspected that the soda prevented the evolution of the sulphurous acid, I omitted the carbonate. From the 16th of May to the 19th of June the vomited matter contained no trace of sarcinæ or torulæ."

In this case the soda was taken at times calculated to interfere as little as possible with the action of the sulphite.—*Med. Times and Gazette, March* 19, 1853, *p.* 301.

33.—*Chloroform in Colic, particularly in Lead Colic.*—Dr. Aran, of Paris, warmly recommends the administration of chloroform in repeated doses of from ten to twenty drops, in colic, and particularly in lead colic. He says, that it relieves the spasm more effectually than opium or belladonna, and moreover possesses the great advantage of being more safely repeated than either of these medicines. A hundred and fifty drops may, according to Aran, be given in 24 hours; and we have no doubt that even a larger quantity, though seldom required, may be safely administered, as chloroform is very quickly eliminated from the system. In corroboration of the value of chloroform in colic, the writer of these lines adds his experience of its efficacy in his own case. He had suffered the most excruciating pain in the back and abdomen for twenty-two hours, accompanied by incessant vomiting, which opium and hydrocyanic acid failed to mitigate: indeed, they were rejected as soon as taken. A dose of twenty drops of chloroform was then taken, well mixed in a little water. After this, there was no more sickness, and almost instantaneously the pain began to abate, and in ten minutes had entirely subsided. Upon a return of the pain, some hours afterwards, it was again and finally removed by a similar dose of chloroform. The necessary purgatives were

afterwards easily retained, and the cure completed.—*Association Med. Journal, Jan.* 7, 1853, *p.* 18.

34.—REMARKS ON THE TREATMENT OF DIARRHŒA BY SULPHURIC ACID.

By S. W. North, Esq., District Medical Officer to the York Union.

During the past two or three years diarrhœa has prevailed to a much greater extent than usual, and consequently much labour has been bestowed in the investigation of this disease, and various new methods of treatment have been suggested, amongst which none has attracted so much attention as that by sulphuric acid; and seldom has any single remedy gained so deserving a reputation in so short a time. Nevertheless, in the hands of many this remedy has failed in its results to realise anything like the advantages it was said to possess over other methods of treatment in use for the relief of this affection. This, I think, is mainly owing to a want of discrimination in the choice of cases suitable for its use, for it is too much the custom to treat diarrhœa on a routine plan, without reflecting that similar symptoms may, and often do, spring from widely different causes, and are to be combated by as different treatment.

When diarrhœa prevails extensively, as it did during the summer and autumn of last year, we may clearly recognise two forms of this affection, somewhat similar in their symptoms, but differing materially in their origin, and requiring distinct methods of treatment.

The one, simple diarrhœa, caused mainly by the kind of food abundant at this season, and generally to be attributed to either errors of diet, or some temporary derangement of the biliary system, and the symptoms of which are copious and frequent fæculent evacuation, slight nausea, griping, and tenesmus; the disease frequently being cured spontaneously, in the course of a day or two, with no other ill effects than temporary debility, and seldom requiring any other treatment than mild oleaginous purgatives, and sometimes a few doses of chalk mixture and opium.

The other form is the one most deserving of attention, as well from the severity of its symptoms as the tendency which it has to lapse into low fever. The following is the usual history of the case:—The patient was either quite well a few hours before, or perhaps had suffered from slight relaxation of the bowels for a day or two, when, without having committed any errors or irregularities in living, he was seized with profuse diarrhœa, the evacuations consisting at first of the contents of the bowels in a very fluid state, ultimately becoming like dirty water, and containing little if any solid matter; nausea and vomiting of large quantities of fluid; severe spasmodic pain in the stomach and bowels; cramps in the extremities, often very violent; the pulse small and frequent; tongue moist, and either clean or only slightly covered with a brownish fur; the surface cold and clammy; countenance anxious; these symptoms being followed by a continued fever, varying in duration from a few days to a week or two. Such is the general character of this form of the affection, presenting itself with various degrees of severity, from apparently simple diarrhœa, to an extent almost bordering on that of Asiatic cholera.

The symptoms most worthy of note, and which seem to me to be sufficient reason for distinguishing this from the preceding form of diarrhœa, are the peculiarly fluid evacuations, the severe cramps in the extremities, and, above all, the consecutive fever. Add to this, that the cases which have fallen under my observation were most numerous in ill-drained and badly-ventilated localities, where we might expect to find epidemic disease most abundant; that numerous cases occurred in the same locality; and I think we may fairly ask ourselves whether this is not a distinct disease of an epidemic character, the therapeutical indications of which may more appropriately be classed with those of Asiatic cholera.

It is in diarrhœa having this character that I found the sulphuric acid a most valuable remedy, frequently in a few hours restoring the patient from a condition of extreme distress to one of comparative comfort.

I usually administered the dilute acid in doses of half a drachm, with a drachm of compound tincture of cardamoms, in an ounce of water, at intervals of from

and, secondly, to administer some remedy capable of exerting a destructive effect on the fungus. With these objects in view, infusion of quassia and bicarbonate of potash were prescribed in mixture, and doses of the sulphite of soda separately, the diet being also regulated. After the lapse of a short time, Dr. Hassall learned, that although the sulphite of soda had not been taken, but only the quassia and bicarbonate of potash, yet a marked and encouraging improvement in the symptoms had taken place, the frequency of the vomitings especially being diminished. Subsequently the sulphite of soda was administered; this remedy, together with the potash and quassia, having the effect of stopping entirely the vomiting for a period of five weeks—in fact, up to the date of Dr. Hassall's communication to the Society. Not only had the vomiting ceased, but the bowels, before so obstinately confined, had become perfectly regular; there was no distension of the stomach, or flatulence; the urine was clear, free from deposit, and passed in normal quantity; exertion does not now cause fatigue as formerly, and the sleep is invariably sound and refreshing.

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The only instance of the effect of the coetaneous administration of an alkali with a sulphite that I know of is contained in the following extract from a lecture delivered by Dr. Jenner, at University College Hospital, and published in the 'Medical Times' for Aug. 23, 1851, p. 193. "On account of the burning pain which he occasionally complained of, I now ordered him a mixture containing sodæ carb. ℥ij. in each dose. On the 13th, 15th, and 16th, he again vomited sarcina in quantity, and, as I suspected that the soda prevented the evolution of the sulphurous acid, I omitted the carbonate. From the 16th of May to the 19th of June the vomited matter contained no trace of sarcinæ or torulæ."

In this case the soda was taken at times calculated to interfere as little as possible with the action of the sulphite.—*Med. Times and Gazette, March* 19, 1853, *p.* 301.

33.—*Chloroform in Colic, particularly in Lead Colic.*—Dr. Aran, of Paris, warmly recommends the administration of chloroform in repeated doses of from ten to twenty drops, in colic, and particularly in lead colic. He says, that it relieves the spasm more effectually than opium or belladonna, and moreover possesses the great advantage of being more safely repeated than either of these medicines. A hundred and fifty drops may, according to Aran, be given in 24 hours; and we have no doubt that even a larger quantity, though seldom required, may be safely administered, as chloroform is very quickly eliminated from the system. In corroboration of the value of chloroform in colic, the writer of these lines adds his experience of its efficacy in his own case. He had suffered the most excruciating pain in the back and abdomen for twenty-two hours, accompanied by incessant vomiting, which opium and hydrocyanic acid failed to mitigate: indeed, they were rejected as soon as taken. A dose of twenty drops of chloroform was then taken, well mixed in a little water. After this, there was no more sickness, and almost instantaneously the pain began to abate, and in ten minutes had entirely subsided. Upon a return of the pain, some hours afterwards, it was again and finally removed by a similar dose of chloroform. The necessary purgatives were

afterwards easily retained, and the cure completed.—*Association Med. Journal, Jan.* 7, 1853, *p.* 18.

34.—REMARKS ON THE TREATMENT OF DIARRHŒA BY SULPHURIC ACID.

By S. W. North, Esq., District Medical Officer to the York Union.

During the past two or three years diarrhœa has prevailed to a much greater extent than usual, and consequently much labour has been bestowed in the investigation of this disease, and various new methods of treatment have been suggested, amongst which none has attracted so much attention as that by sulphuric acid; and seldom has any single remedy gained so deserving a reputation in so short a time. Nevertheless, in the hands of many this remedy has failed in its results to realise anything like the advantages it was said to possess over other methods of treatment in use for the relief of this affection. This, I think, is mainly owing to a want of discrimination in the choice of cases suitable for its use, for it is too much the custom to treat diarrhœa on a routine plan, without reflecting that similar symptoms may, and often do, spring from widely different causes, and are to be combated by as different treatment.

When diarrhœa prevails extensively, as it did during the summer and autumn of last year, we may clearly recognise two forms of this affection, somewhat similar in their symptoms, but differing materially in their origin, and requiring distinct methods of treatment.

The one, simple diarrhœa, caused mainly by the kind of food abundant at this season, and generally to be attributed to either errors of diet, or some temporary derangement of the biliary system, and the symptoms of which are copious and frequent fæculent evacuation, slight nausea, griping, and tenesmus; the disease frequently being cured spontaneously, in the course of a day or two, with no other ill effects than temporary debility, and seldom requiring any other treatment than mild oleaginous purgatives, and sometimes a few doses of chalk mixture and opium.

The other form is the one most deserving of attention, as well from the severity of its symptoms as the tendency which it has to lapse into low fever. The following is the usual history of the case:—The patient was either quite well a few hours before, or perhaps had suffered from slight relaxation of the bowels for a day or two, when, without having committed any errors or irregularities in living, he was seized with profuse diarrhœa, the evacuations consisting at first of the contents of the bowels in a very fluid state, ultimately becoming like dirty water, and containing little if any solid matter; nausea and vomiting of large quantities of fluid; severe spasmodic pain in the stomach and bowels; cramps in the extremities, often very violent; the pulse small and frequent; tongue moist, and either clean or only slightly covered with a brownish fur; the surface cold and clammy; countenance anxious; these symptoms being followed by a continued fever, varying in duration from a few days to a week or two. Such is the general character of this form of the affection, presenting itself with various degrees of severity, from apparently simple diarrhœa, to an extent almost bordering on that of Asiatic cholera.

The symptoms most worthy of note, and which seem to me to be sufficient reason for distinguishing this from the preceding form of diarrhœa, are the peculiarly fluid evacuations, the severe cramps in the extremities, and, above all, the consecutive fever. Add to this, that the cases which have fallen under my observation were most numerous in ill-drained and badly-ventilated localities, where we might expect to find epidemic disease most abundant; that numerous cases occurred in the same locality; and I think we may fairly ask ourselves whether this is not a distinct disease of an epidemic character, the therapeutical indications of which may more appropriately be classed with those of Asiatic cholera.

It is in diarrhœa having this character that I found the sulphuric acid a most valuable remedy, frequently in a few hours restoring the patient from a condition of extreme distress to one of comparative comfort.

I usually administered the dilute acid in doses of half a drachm, with a drachm of compound tincture of cardamoms, in an ounce of water, at intervals of from

layer, varying in the thickness (according to the quantity of pus present), of a yellowish green material, which has a creamy consistence. This deposit leaves the supernatant fluid more or less clear, according to its greater or less completeness; but frequently the urine continues to hold a certain quantity of pus in suspension, which leaves a certain amount of turbidity or milkiness in the supernatant fluid. If the urine be allowed to stand for some time, this greenish layer of pus undergoes certain changes, by which the decomposition of the urine is brought about; and the fluid soon becomes alkaline, owing to the presence of carbonate of ammonia, which is caused by the decomposition of the urea. At the same time, the alkali, thus developed, reacts in a peculiar way on the pus, which is observed to become thick, viscid and ropy, and to lose its minutely granular appearance, becoming more or less transparent, and forming what has long been described as glairy mucus. It has been found that potash (and I believe the observation was first made by Dr. Babington) also re-acts in this manner upon pus, and, in consequence, it becomes a valuable re-agent to enable us to detect the presence of this substance.

Here I take a specimen of urine exhibiting the general characters which I have just described as being characteristic of purulent urine. You see there is an abundant creamy-looking deposit; and if I pour off the supernatant fluid, and add a little of this liquor potassæ, you will perceive the change occur which I have just mentioned. As I shake the vessel, you observe the deposit becomes tenacious and glairy, so that, when I attempt to pour it into another vessel, it does not drop, but runs off in a viscid stream, very like uncoagulated white of egg; indeed many persons might mistake this glairy mass for white of egg. Pus altered in its character in this manner by the carbonate of ammonia, set free in consequence of the decomposition of the urea, was, until late years, ordinarily considered as a deposit of glairy or ropy mucus; but it has since been shown that mucus never assumes this particular form of a ropy sediment, which sinks to the bottom of the vessel; nor does it ever exist in the urine in such quantity as we frequently find this altered pus.

I have said that purulent urine is always muddy; but this is not a character by which we are enabled with certainty to say whether a given specimen contains pus. Urine may be muddy from other causes; I mean, urine may exhibit a muddy appearance as soon as it is passed from the presence of other deposit besides pus. Phosphatic urine is also muddy, and often much resembles purulent urine; but generally it appears paler than the latter. After phosphatic urine has been standing for some time, a deposit is always found just as it occurs in purulent urine; but, in the former, the deposit is usually white instead of being yellow, and is flocculent and light instead of being thick and heavy. We also observe this very important difference between these two forms of deposit, that the addition of a little acid renders the phosphatic urine perfectly clear, while it increases the turbidity of the other. This re-action will always enable us conclusively to distinguish between a specimen of urine muddy from the presence of pus and one which is rendered turbid by the precipitation of phosphates. Phosphatic deposits are all readily soluble in dilute mineral acids, and are precipitated again from the acid solution by ammonia. Purulent deposits are not dissolved by dilute acids; but frequently the turbidity is increased, owing to the precipitation of a little albumen from the liquor puris. Another distinctive character of urine containing a considerable amount of phosphate is, that it is usually, though not always, alkaline; while purulent urine more frequently exhibits a slightly acid re-action, at least when quite fresh, or it may be neutral; but we do not frequently meet with urine of this description of a strongly acid re-action unless the patient is taking large quantities of mineral acids at the time. Then, as I mentioned to you just now, we have in alkalies a most excellent and easily-applied chemical test, which will enable us with certainty to discriminate between these deposits; and liquor potassæ has been found the most convenient alkali which we can use for the purpose, as it will keep well, and requires no great profundity of chemical knowledge in its application; and, so far as I know, is not open to any sources of fallacy.

There are other points distinctive of urine containing pus. If we apply heat to the clear fluid after the subsidence of the deposit, it will coagulate, and the amount of coagulation which takes place will be in direct proportion to the quantity of pus present. This will take place if the urine be acid; if it be alkaline, you must

cidulate it before heating it. The albumen is derived from the liquor puris; and hence purulent urine is always albuminous, and it is albuminous because purulent.

For an additional and unequivocal test of pus, you must look to its physical constitution. Pus consists of two essential parts, *the liquor puris*, and *the pus globules* which are held in suspension in the former, just as the blood-corpuscles are suspended and float about in the liquor sanguinis. The *pus globules* or *pus cells* are to be recognised by the microscope. If a specimen of urine contain albumen, it may be derived from the liquor puris, and may, therefore, be indicative of the presence of pus, or it may be due to the escape of serum only, as occurs in Bright's disease and nephritis. This point may be at once settled, as regards the presence of pus, by examining a drop of the turbid urine under the microscope, when we shall not fail to recognise the pus corpuscles if pus be present in the urine. These particles are somewhat larger than the red corpuscles of the blood, and differ from them in shape, being globular, while the latter are bi-concave discs. They much resemble the colourless corpuscles of the blood, but appear darker and more highly granulated than the latter. This granular appearance seems to be owing to the presence of numerous highly refracting molecules in the pus corpuscle, which are doubtless of a fatty nature; and to them, most probably, the change which occurs on the addition of liquor potassæ is due, the fatty matter being converted into a soap by the alkali. When treated with acetic acid, the pus corpuscles exhibit two or three circular bodies in the centre, having much the appearance of oil globules. Some corpuscles are found to contain three or four of these bodies; others two; and in some, only one can be detected. The presence, then, of particles like these will enable you to distinguish pus from all other deposits which occur in the urine.

We have also to distinguish the pus deposits from deposits of mucus. Mucus seldom forms a distinct stratum, like pus: if viscid, it is so when acid; but pus exhibits the glairiness which renders it liable to be mistaken for mucus, only when it is alkaline. If we examine mucus under the microscope, we shall not fail to detect more or less of epithelium, and the so-called mucous particles in small numbers, which, doubtless, are incipient pus corpuscles. Mucus, again, does not re-act, like pus, with solution of potash, and it is soluble, to a great extent, in acetic acid.

Having considered the more prominent features of deposits of pus as they occur in the urine, let me say a few words upon the various sources from which the pus which is found in the urine may have been derived, and the circumstances which may give rise to its formation. The pus may have been developed from the lining membrane of any of the surfaces over which the urine would flow as it passes from the kidneys, or in contact with which it would come. It may come from the urethra in the male; and in the female it is often derived from the mucous membrane of the vagina. When we examine the urine of a female, and find pus present in it, we should always be careful to inquire if leucorrhœa be present, and in very many cases this will be found actually to be the case. It therefore becomes important to keep this in view, for I have known many persons much puzzled, from this single circumstance. They have found pus in the urine, and have been unable, from the absence of other symptoms, to draw any conclusion with reference to its origin. Pus may also come from an adjoining abscess which has opened into one of the urinary passages. An inflammatory state of the mucous membrane of the bladder is one of the most common causes of the presence of pus in the urine; and inflammation of the ureters and of the pelvis of the kidney (*pyelitis*) will also give rise to it, and, though last, not least, suppurative inflammation of the kidney itself.

When the quantity of pus discharged is considerable, I do not know of any particular feature, either of it or of the urine, by which it may be determined whether the pus comes from an abscess in the kidney, or from some of the surfaces over which the urine passes, as the pelvis of the kidney, the ureter, or the bladder.

One point in reference to this matter, which will be very important if future investigations will confirm it, is due to my friend, Dr. Beale, who thinks that, in those cases in which the pus is derived from the bladder, ureters, or pelvis of the kidney, triple phosphate is almost invariably present; but in those instances in which the pus is due to an abscess in the kidney, or to the presence of an abscess

situated external to the urinary passages, and communicating with them, the crystals of triple phosphate are almost always absent.

When mucous surfaces are highly irritated, we find they have a great disposition to secrete phosphate, and this may account for the great quantity of triple phosphate we usually meet with in cases of irritation of the mucous membrane of the bladder or pelvis of the kidney. Abscesses formed in the neighbourhood of the urinary passages, and opening into them, may furnish pus to the urine. Thus a prostatic abscess may burst into the urethra, or lumbar abscess may open into the ureter.—*Med. Times and Gazette, April* 2, 1853, *p.* 337.

38.—ON VARIOUS FORMS OF ALBUMINIFACIENT RENAL DISEASES.

From a Review of the work of Dr. George Johnson on these forms of Kidney Disease, in the 'Edinburgh Medical and Surgical Journal.'

[The morbid anatomy of the first form, viz., *Acute Degenerative Nephritis*, consists, as frequently mentioned before in these pages, of a congestive or inflammatory state of the textures of the kidney, mostly seated in the cortical part, but chiefly in the tubules, producing an exfoliation of epithelial cells and scales lining the tubules. Dr. Johnson also thinks it affects the Malpighian bodies, occasionally destroying one or two of these. Let us consider what is the]

"*Pathology of the Disease.*—Having examined the morbid anatomy of acute desquamative nephritis, we are prepared to enter upon the subject of the pathological interpretation of the various conditions which our anatomical investigations have revealed to us. In the first place, it will assist us to comprehend the whole subject, if we make some general observations illustrative of the proposition which we shall adopt as a central truth—viz., that *all the changes of structure commence in the secreting cells of the gland, and are the result of an effort made by the cells to eliminate from the blood some abnormal products—some materials which do not naturally enter into the composition of the renal secretion.*

"Allusion has already been made to the physiology of secreting cells, and it has been shown that the cells of the different glands have characteristic appearances, which render it quite easy for a practised observer to distinguish them from each other. The cells of the liver, for instance, have a very different appearance from those of the kidney. It is quite evident, too, that their appearances are not more diverse than their vital powers. The cells of the kidney have the power of secreting urine, while those of the liver secrete bile. And although, from an examination of the cells, the physiologist could not have predicted what would be the nature of their secretions, yet he rightly concludes that there is an intimate relationship between the structure and appearance of the cells and the nature and composition of their secreted products, so that he learns to attribute to a cell having certain characteristic appearances, the mysterious vital power of secreting the constituents of urine, while, with a cell having certain other appearances, he associates the power of secreting bile.

"The next point which it is important to observe is, that the cells of each gland, besides the constituents of their own proper secretion, have also the power of separating from the blood certain materials which do not form a part of their normal secretion. It is well known, that many salts and many odorous and colouring matters, derived from the vegetable and animal kingdom, when introduced into the blood through the stomach, are eliminated by the kidneys; and the separation is effected so quickly and so completely, as to justify the belief, that the materials in question are secreted by the renal cells with as much facility as those which constitute their own proper secretion. In regard to some of these materials, it appears in the highest degree probable, that they may be secreted by the kidneys for a long time and in large quantities, without producing any perceptible change in the structure of the gland, or any other modification of the urine than the mixture with it of the salt or other foreign substances, with the addition, perhaps, of a certain quantity of water, which is required to keep the materials in solution. Whether any matters, not being constituents of healthy urine, can be secreted by the kidneys

without producing some slight modification of the secreting cells, may perhaps admit of doubt; but the effect upon the cells is not commonly so injurious, that the physician need hesitate to give his patients for weeks, or even months, consecutively, such medicines as iodide of potassium, although he knows that this new material is continually being secreted by the renal cells, and so mingled with the urine.

"It is important, however, to observe, that there are some materials which, when secreted by the kidneys in moderate quantities, and for a short time, appear to lead to no injurious consequences, may yet produce very decided changes of structure, after the long-continued secretion of the same materials in larger quantities. We have an instance of this, in the secretion of sugar by the kidneys in diabetes. It is now a well-ascertained fact, that this disease consists in an imperfect digestion and assimilation of certain alimentary materials, as a consequence of which, the sugar which is formed in the stomach and intestines enters the blood, and is thence removed by various secretory organs, but chiefly by the kidneys. The sugar is a powerful diuretic, its passage through the secreting cells being accompanied by a flow of water from the Malpighian bodies, sufficient to keep it in solution. It can rarely happen, that an opportunity offers for examining the kidneys in the early stage of diabetes, so as to ascertain the condition of the cells at that period; but we know that for many months, several pints of urine will be secreted in the day, and this, without any evidence of the slightest imperfection in the discharge of the functions of the kidney. It is highly probable, however, that from the commencement, the secretion of sugar is accompanied by changes in the appearance of the cells; and after the long continuance of the disease these changes are very decided. In two cases of death from diabetes, I found the convoluted tubes of the kidney remarkably opaque, and having a yellowish tinge, the cells being also opaque, from containing a large quantity of finely granular matter with oil. In one case the urine had been albuminous and contained granular casts; of the urine in the other case I have no information, except that it was saccharine. The appearance of the gland-cells in the two cases was very similar, and was doubtless connected with the continued secretion of sugar. An albuminous condition of the urine, with more or less of structural change in the kidney, has, as Dr. Christison remarks, been observed to occur so frequently in connexion with diabetes, that their concurrence can scarcely be considered as altogether accidental. The probable explanation of the phenomena is, that the long-continued secretion of sugar by the kidneys modifies the gland-cells, effecting a change in their appearance and in their vital endowments, so that in adapting themselves to the secretion of sugar, they become more or less unfitted for eliminating the constituents of their own proper secretion. This effect of the secretion of entirely new materials by the gland-cells, is no more than might have been inferred *à priori*, from a consideration of the physiology of secretion, and of the specific characters which mark the cells, no less than the secreted products of each gland.

"We have another illustration of the effect upon the secreting cells of an effort to eliminate new materials in cases of jaundice. When, from any cause, the functions of the liver are so imperfectly performed as to allow of the bile accumulating in the blood, the urine is found to be deeply tinged with some, at least, of the constituents of the biliary secretion; and on a microscopical examination of the urine, we find the renal secreting cells in variable numbers, some being scattered, while others are entangled in moulds of the kidney tubes, and all of them coloured by the bile contained within them. When we have an opportunity of examining the kidney after death in these cases, we find the tubes deeply tinged by the bile contained in their secreting cells, and some tubes are nearly or quite filled with cells which have been thrown off, while others have been formed upon the basement membrane beneath them. Thus it appears that when the blood circulating through the kidney contains an excess of bile, the renal cells, in striving to eliminate these materials, become deeply tinged by it, and many of them are so far modified, as to be shed by a process of desquamation.

"In the instances here adduced of a change in the structure of the renal cells effected by the secretion, in the one case of sugar, and in the other of bile, we have tolerably conclusive evidence as to the nature of the materials which have modified the cells. In many cases, however, we know nothing certain as to the nature of the material; and the evidence that there is some *materies morbi* which excites the

renal disease is derived—1st, from a consideration of the circumstances under which the disease occurs. These have been referred to at some length in the preceding chapter, where an attempt was made to establish the proposition, that *all the causes of renal disease have this common feature, that they tend to produce a morbid condition of the blood.*

"2d. We gain additional evidence upon the point in question from analogy. We know that during the process of normal secretion, there is no visible shedding of secreting cells; but we have seen that certain materials foreign to the renal secretion, while they are passing through the gland-cells, so modify the process of secretion and of cell-growth, as to give rise to a desquamation of cells from the renal tubes. And this observation will suffice to show the probability that, in other cases, a like process of desquamation results from a similar cause, viz., an elimination of some morbid material by the renal cells. When, therefore, a patient has been exposed to one or more of the influences alluded to in the preceding chapter, as tending to produce a morbid condition of the blood, and when the urine presents the signs of the desquamative process occurring in the kidneys, there can be little doubt that this desquamation is the result of an effort to eliminate some of the abnormal materials, which have either been introduced into, or developed within the blood.

"The reader who has attended to the preceding detail of facts and inferences, will have no difficulty in perceiving their applicability to the pathological explanation of the morbid changes produced by desquamative nephritis.

"It is assumed, that the blood being in a morbid state, whether from the poison of scarlatina, or from any other of the various causes alluded to in the preceding chapter, an effort is made to eliminate the noxious matters by the secreting cells of the kidney. The cells, in striving to separate the strange materials, become modified in their action and nutrition, and being rapidly thrown off into the tubes, are then removed by the current of liquid, and appear in an entire form in the urine. Meanwhile the process of secretion is checked, and this, probably, in two ways. 1st. It is likely that when the cells are engaged in separating any new material, which so far modifies them as to lead to the process of desquamation, they perform their functions less rapidly and completely than under ordinary circumstances, and, consequently, that the act of secretion receives a check from the moment that any material reaches the cells which requires this modified action—a retardation of the function of secretion which may be illustrated by the check given to the electric current, when, in one of the cells of a battery, materials having less affinity for each other are substituted for more active and efficient elements.

"2d. When the desquamative process has resulted, as it soon does, in the engorgement of many of the tubes with their accumulated contents, it is evident that in these tubes the process of cell growth and of secretion must be greatly retarded, if not entirely arrested.

"The next point to be observed is, that, together with impeded secretion, there is, as a necessary consequence, retarded circulation. This subject is fully discussed in connexion with that of chronic inflammation of the kidney. In this place it will suffice to state, briefly, that the process of secretion being interfered with, in the manner already described, and the blood, consequently, being imperfectly purified and freed from its excrementitious matters, the circulation through the intertubular capillaries is impeded, and the vessels which lie behind these, in the course of the circulation—the Malpighian capillaries and the arteries—become distended. Serum now escapes freely from the gorged Malpighian capillaries, and mixing with the urine, renders it albuminous, while the coats of the vessels begin to assume the opaque and thickened appearance before alluded to. Together with the serum there is a transudation of fibrinous material, which coagulates in the tubes, entangling on its surface some of the desquamated epithelial cells, and thence it escapes with the urine, in the form of the epithelial casts which have been already described. Further, some of the over-distended Malpighian capillaries give way under the pressure to which they are subjected, and their contents escape into the tubes, some of the blood-corpuscles becoming entangled in the epithelial casts, and others being scattered through the urine, and contributing to form the dark-red sediment before described."

This is the form of renal albuminocritic disease which takes place after attacks

of scarlet fever, after common typhus, in acute dropsy, and after exposures to cold with errors in diet, and probably a considerable degree of intemperate living and irregular habits. At the same time, it must be allowed, that instances not unfrequently take place after thorough and continued exposure to cold and moisture, without previous irregular and intemperate habits, yet in persons in whom there has existed a long-continued state of susceptibility to the disease, which has thus been called into activity by the last exciting cause. The persons in which this mode of development is most frequently seen, are those of what is called the scrofulous habit. A mode of origin also not uncommonly observed is, when after an attack of scarlet fever, the patients are allowed to return too early to the use of animal food upon the idea of restoring strength. Instead of restoring strength, this mode of diet excites the vascular system, and especially the cortical texture of the kidney, while the skin is not yet in a condition to relieve the circulation by its secreting and excreting powers; and the result is an attack of acute desquamative nephritis.

The prognosis in this form of renal disease is upon the whole rather favourable. But much, if not all, depends upon judicious treatment. It is manifestly, in ordinary circumstances, a disease quite capable of cure. But to effect this, much attention to treatment, both medicinal and dietetic, is indispensably requisite.

[In the therapeutic treatment of the disease the chief objects to be held in view are, protection from cold; moderate rather unstimulating diet; regular action of the bowels and of the skin; and, above all things, refraining from those stimulating remedies, diuretics, as these are in all instances dangerous. Iron may be given after inflammatory symptoms have disappeared. Examined by the microscope, fibrinous casts of the uriniferous tubes are to be considered pathognomonic of the disease; and from these being many or few the state and progress of the disease is to be judged.

The second form of these diseases is the *Chronic Desquamative Nephritis.* This is merely a chronic form of the last; sometimes it passes into it by imperceptible gradations, and sometimes without any of the marks of the acute form; and may therefore be gradually established without any of the phenomena of the acute disease taking place. The principal characteristic of this form is the long-continued shedding of epithelium, appearing in a more or less disintegrated state in the urine. The urine is for the most part albuminous, but variable in quantity and specific gravity.]

This disease is frequently a consequence of chronic gout, or of some kindred disorder in the general health. It gives rise to great changes in the blood, and several various constitutional disorders consequent upon these changes, among which the most frequent and important are anasarca and dropsy of one or more serous cavities, inflammation of the serous membranes, hypertrophy of the heart, with or without disease of the valves, and lastly organic changes or great functional disturbance in the nervous centres.

In one word, it may be said, either that this disease is a part and effect of chronic gout: or chronic gout and chronic desquamative nephritis are the joint offspring of the same morbid condition of the system.

The urine in this form of disease should be examined when it is not turbid with lithates. When voided it is quite clear, and remains so after standing a few hours. Then, however, it deposits a sediment, dense and white, which looks like fine dust at the bottom of the vessel. Under the microscope this is found to consist partly of a scattered amorphous material, partly of the same material, in the form of cylinders, which have evidently come from the renal tubes, and which the author proposes to denominate *granular casts.* This granular material the author regards as disintegrated epithelium, which has become detached from the basement membrane of the tubes, and subsequently washed out with the urine; some of it retaining the cylindrical form, while part is irregularly scattered.

The following account of the state of the urine in this disorder is given.

"In the next, more advanced, stage of the disease, the urine commonly presents the following characters. During the attack of gouty inflammation in the joints, the secretion is scanty, and its specific gravity rather high; it is also albuminous, and continues so for a variable period after the gouty paroxysm is over, the albumen gradually diminishing in quantity, and at length disappearing entirely, until the

next attack of gout brings with it a reappearance of the albumen. A microscopic examination now shews that during the time when the urine is albuminous, there is a more abundant shedding of disintegrated epithelium than in the earlier stage of the disease; the granular casts being numerous, and forming a rather copious, dense, whitish precipitate at the bottom of the vessel. The casts diminish in number, simultaneously with the decrease of albumen in the urine, but at this stage of the disease they seldom disappear entirely; traces of them remaining throughout the intervals between the paroxysms, even when there is no admixture of albumen with the urine. The casts are sometimes obscured by a deposit of uric acid, or urate of ammonia, which at this period continues to be excreted in considerable quantities during and after the attacks of gout. In the intervals of the paroxysms, the urine is commonly more abundant than in health, of lower specific gravity, and of a somewhat paler colour. I have already said that the albumen disappears, but that the granular casts remain, though they are much less abundant than during, and for some time after, the gouty paroxysm, when the renal desquamation is more active.

"We have here a series of phenomena indicating more advanced and more permanent diseases in the kidney, than during that which I have described as the first stage. For, 1st, during the general derangement which accompanies and follows the attacks of gouty inflammation of the joints, the increased number of granular casts shews a more active desquamative process, and the albuminous condition of the urine is evidence of a more impeded circulation; and, 2d, during the intervals of the gouty paroxysms, the continued presence of the granular casts, though in diminished numbers, shows that the kidneys are constantly excreting some of the morbid matters with which the system is becoming saturated, and of which the so-called 'chalky' deposits, which now often begin to form in the joints and elsewhere, afford one kind of evidence."

[Essentially this disease is an atrophy of the kidney. If the chronic desquamation is progressive the result is atrophy of the tubes; if the disease is stayed after a certain number only of the tubes is denuded, such a condition is favourable to their conversion into cysts. The wasting of the kidney is produced by the exfoliation of the broken up cells and the disintegration of the epithelium.]

Dr. Johnson gives a just view of the prognosis in this disease, and the treatment to be pursued. The main objects in treatment are to reduce the rate of diet to the exigencies of the system; to restrict and regulate the amount of food to be taken; to amend the action of the skin by suitable clothing, the use of the warm bath, protection from cold, and removal, if need be, to a dry, rather warm climate; to abate the congestive and inflammatory state of the kidneys by occasional local blood-letting by means of cupping, and by revulsion by means of frequent blisters, or the use of the seton. The author is averse to the use of blisters and the employment of liniments containing turpentine, from the apprehension that they may irritate the tubular and calycine part of the kidney. An easy method to obviate the bad effects of the cantharides of the blister is to keep it applied only five hours, and then apply over the surface a cloth well covered with resinous ointment.

The third form is what Dr. Johnson has termed *waxy degeneration of the kidney*. The discharge by the urine of waxy casts, varying in size, is the characteristic symptom of this form. All the cases in which Dr. Johnson observed these casts, along with epithelial casts, recovered, but]

From all that is stated concerning this condition of the urine, it appears hitherto very doubtful whether it ought to be regarded as indicating the existence of a distinct, substantial, and essential disease of the kidney.

[The fourth form of these renal diseases is the *Non-desquamative Disease of the Kidney*. Here the object of this morbid action is the elimination of certain abnormal products of the blood; so that in this form also, the state of the kidney is one of congestion and inflammation, but without exfoliation of the epithelium taking place.]

So far as we understand the train of reasoning adopted by the author, it amounts to this: Non-desquamative disease of the kidney, congestive or inflammatory,—for, in our opinion, positive inflammation is not necessary to constitute any one of these morbid states,—is a very dangerous and serious disorder; in so

far as it shows, that the noxious matter presumed to lurk in the circulation is not eliminated, at least not freely eliminated. The occurrence of small casts which takes place in this form of disease, and the presence of albuminous urine, show that an effort is made to get rid of some noxious matter; but as no epithelial scales are observed, this proves that no desquamation or exfoliation takes place; and, when this is the case, the discharge of the hurtful matters is less free and perfect than is requisite for the exigencies of the system.

[Lastly, we come to *Fatty Degeneration of the Kidney.*—Of this there are two varieties,—granular fatty kidney, and mottled fatty kidney. These are included under the term steatotis, now known under various terms, such as granular degeneration, mottled kidney, Bright's disease, &c. For information upon these forms we must, however, refer the reader to the next article, and to the previous volumes.] *Edinburgh Med. and Surgical Journal, April* 1853, *p.* 436.

39.—ON BRIGHT'S DISEASE OF THE KIDNEY.

By Dr. George Johnson.

[We present to our readers in this paper the views of this eminent writer; for, though professing to be a review of several foreign works, it is, in reality, an interesting and short monograph on this subject, by Dr. Johnson. First, of the morbid change in the kidney:]

The following is the order of phenomena as interpreted by Reinhardt and Frerichs: an engorgement of the renal blood vessels, an effusion of inflammatory product, a more or less complete and general metamorphosis of these products into fat, and finally atrophy and wasting of the kidney. The small contracted granular kidneys have once been fat; the large, pale, fat kidneys are in continual progress towards atrophy and contraction.

[In answer to this definition of Bright's disease, Dr. Johnson remarks:]

The first observation which we have to make, with reference to this systematized description of renal disease, is, that there is no proof whatever that hyperæmia or over-fulness of the blood-vessels, is either a cause or an antecedent of those exudations into the uriniferous tubes, which constitute an essential feature of the inflammatory forms of renal disease. We refer now to the rapid formation of epithelium within the convoluted tubes, and to the occasional replacement of the normal epithelium by puriform cells. These changes in the tubes, it is true, are accompanied by engorgement of the blood-vessels, and the phenomena occur almost, if not quite, simultaneously; but, in the order of causation, the changes in the secreting cells stand first. The circulation is impeded in consequence of morbid changes primarily affecting the secreting cells, and retarding their functions. Engorgement of blood-vessels implies, not an increased afflux of blood, or a more rapid circulation, but a retarded and impeded circulation, the impediment being shown by the frequent occurrence of hemorrhage from the Malpighian capillaries in the early stages of acute renal disease, and by tortuosity of the arteries, with great hypertrophy of their muscular coats, after long-continued morbid changes affecting the secreting cells.

The theory of the *oneness* of Bright's disease has apparently had its influence in leading our authors to overlook the importance of distinguishing the various kinds of exudation into the tubes, which occur during the inflammatory forms or stages of the disease. If these varieties of morbid products were appreciable only after the death of the patient, their distinction would have little practical value; a moderate amount of clinical observation, however, will show, first, that the precise nature of the pathological changes which are occurring in the kidney may, with few exceptions, be as readily detected by a microscopical and chemical examination of the urine during life, as by the most searching *post mortem* inspection of the kidneys; and, secondly, that the various kinds of products observed in the urine have a widely different significance when viewed in relation to prognosis. With reference to this point, it is of the first importance to ascertain, in any case of recent albuminuria, whether the urine is clear and free from sediment, or whether it deposits morbid materials, and what is the nature of these materials,—whether

there are any forms of tube-casts, and what is their appearance,—are they composed of blood or of pure fibrin? or do they entangle organic cells of any kind, and what is the nature of these cells? have they the character of renal gland-cells; and do they contain oil, or are they free from that material? or, lastly, do they more nearly resemble pus-corpuscles?

[The microscopical examination of the urine, during the patient's life-time, is of the greatest importance in investigating the disease. In the inflammatory stages, in a large proportion of cases, renal gland cells are entangled in the fibrinous materials of the casts; and in other instances the casts are transparent and homogeneous, apparently being composed of pure fibrine, larger, and without entangled epithelial cells. The latter ones have been formed in those tubes which possess *no* epithelial lining; the former and smaller have been moulded in tubes which possess the epithelial lining complete.]

The Stage of Fatty Degeneration.—In considering the subject of fatty degeneration of the kidney, it is very important to bear in mind that the morbid condition occurs in two distinct forms. The large *granular fat kidney*, which is represented in the third figure of Dr. Bright's third plate, is, in a large proportion of cases, a secondary condition, which has been preceded for a longer or shorter period by an inflammatory state of the organ. We have observed the approach of this form of disease under the following circumstances:

1. An acute attack of general dropsy, with scanty, high-coloured, albuminous, and bloody urine, and an abundant desquamation of epithelium, is followed, after a period of three or four weeks, by an appearance of oil in some of the cells; and as the disease makes progress, the total amount of epithelium in the urine diminishes, while the proportion of the cells which contain oil is increased, until at length nearly all the cells are more or less distended with oil, many of the cells, as well as scattered oil-globules, being entangled in small transparent wax-like casts. After death the kidneys are found enlarged, the cortical substance pale, and having scattered through it the characteristic yellow granulations, which very much resemble the minute atheromatous spots which are often seen in the arteries. These granulations are found, on microscopical examination, to be composed of convoluted tubes distended with oil, which is partly free and partly contained in cells. In other tubes the epithelium appears opaque, but contains no oil, and the central canal is free from deposit, while in others again there is an accumulation of epithelium, or a fibrinous effusion, or both combined.

2. In other cases the approach of fatty degeneration is different. The disease is chronic from the commencement; the urine is highly albuminous, but frequently of the natural colour, and either free from sediment, or it deposits a light cloud, which contains some of the small transparent waxy casts before mentioned. After a period, which may vary from a few weeks to many months, these casts entangle oil partly in the form of scattered globules, and partly contained in cells. The oily casts and cells continue until the fatal termination, and after death the kidneys present essentially the same appearances as in the cases last mentioned.

The second form of fatty degeneration of the kidney differs in many important particulars from the preceding. The kidney is enlarged, but the cortical substance wants the granulations which are characteristic of the first-mentioned form, and it has instead a mottled appearance. On a microscopical examination all the tubes of the cortical substance are found to contain an excessive quantity of oil, which is, for the most part, contained within their epithelial cells. This condition of the kidney is sometimes found both in the human subject and in the lower animals—in cats and in dogs—unconnected with albuminuria, or with other functional symptoms of renal disease; while in other cases of dropsy, with albumen and oil in the urine, this mottled form of fatty degeneration has been the only anatomical change observable in the kidneys after death. It will be seen, therefore, that the two forms of fatty degeneration differ in these important particulars: 1st, that in the granular form of disease the fatty degeneration is partial, while in the mottled form it is general, throughout the tubes of the cortical substance; 2nd, that in the first form of disease, albuminuria, and what may be considered an inflammatory stage, precede, sometimes for a considerable period, the signs of fatty degeneration, while in the second form a great degree of fatty degeneration may exist unassociated with an albuminous condition of the urine.

The stage of Atrophy.—We come now to the consideration of that condition of the kidney, the most remarkable outward feature of which is a diminution of size and weight. The atrophy affects primarily the cortical substance, the surface of the kidney usually becomes uneven and coarsely granular, and its vascularity is much diminished. The first and second figures in Dr. Bright's third plate are probably familiar to most of our readers.

We have already stated that Reinhardt and Frerichs agree in considering that these small granular kidneys have passed through the stage of fatty degeneration, and that atrophy of the gland is only a later stage of the same morbid process as that of which inflammatory effusion and fatty degeneration constitute the first and second stages. In this opinion Eisenmann and Mazonn also concur, although they differ from Reinhardt and Frerichs in respect to some points of less importance. Now, with reference to this question, we dissent entirely from the opinions of these pathologists. True it is that a careful and extended series of observations upon morbid urine and kidneys had led us to form a judgment upon the point in question before we had any knowledge of the opinions referred to, but we trust that we were not, on that account, less open to conviction by any evidence which might be adduced to prove the transition from fatty degeneration of the kidney to that contracted condition of the organ with which every pathologist is familiar. But as we have met with no such evidence in the course of our own study of morbid phenomena, so we find none in the writings to which we have access. None of our authors attempt to prove the transition in question by clinical observation of the urine, but their opinion appears to be based upon what they consider the various stages of morbid change in the kidneys, as determined by *post-mortem* examination.

Our limits will permit us to indicate only some of the principal facts, which tend to prove, as we think incontestably, that the large granular fat kidney and the small contracted kidney are the result of two morbid processes as essentially diverse as is consistent with the fact of the two diseases affecting the same tissues.

The most characteristic feature of that form of disease which leads to atrophy of the kidney is a disintegration of the epithelial cells, which appear in the urine in the form of granular casts of the tubes. In consequence of this washing away of disintegrated epithelium from the tubes, the basement membrane is left denuded, and subsequently the tubes, having lost their epithelial lining, either waste away entirely, or, as we believe, they may continue to secrete a serous liquid, and so become dilated into cysts. In consequence of the atrophy of the tubes, the meshes of the matrix, in which the tubes are packed, become narrowed, and the fibres appear relatively thicker. Frerichs describes a development of new fibrous tissue as an occasional occurrence, and Mazonn considers it to be a constant and a characteristic condition. As Frerichs doubts the very existence of the normal fibrous matrix, his evidence upon this point is of little value to those who believe in the existence of such a tissue. Mazonn recognises the normal intertubular tissue, and believes that he can distinguish this from the newly-formed fibres which are the product of disease.

A very few of the tubes may usually be found to contain oily matter, and this occurs more frequently in the denuded tubes than in those which still retain their epithelial lining. The thickening, and finally the obliteration, of the Malpighian capillaries, and the hypertrophy of the arterial coats, occur in this as in all forms of chronic renal disease.

The points of contrast between the fat granular kidney and the contracted granular kidney are chiefly in respect of the tubes, with their epithelial lining. In the contracted kidney the disintegrated epithelium is swept away in the form of granular casts, and the tubes thus left denuded either waste or grow into cysts. In the fat kidney the epithelium for the most part retains its position, and undergoes fatty degeneration, the tubes neither become denuded nor waste as in the contracted kidneys, nor do they, except in very rare instances, grow into cysts. The combination, in the same subject, of the characters of the fat and the contracted kidney, are so rare as to prove that, while the two forms of disease are not absolutely incompatible, they are by no means allied; indeed, their relation is rather one of antagonism, since, in the one case, the epithelium is disintegrated and swept away, while in the other it remains, and undergoes fatty transformation.

That the fat kidney has no tendency to pass into the contracted one, is shown by

the *post-mortem* examination of cases which have been for a long time under observation. Not long since we examined the kidney of a man who had been nearly four years ill. He first had dropsy in the autumn of 1848: the urine was highly albuminous, and contained only casts and cells in November, 1849, the same in January, 1850, and again in December, 1851; after that we have no note of the urine. He died in March of the present year (1852). One kidney had been destroyed by a calculus in the ureter, and the other was more than double the natural size and weight, and had all the characters of a granular fat kidney, but not a trace of denuded or atrophied tubes. In another case, which had been nine months under observation, the urine, from first to last, contained oily casts and cells. The kidneys were much enlarged, and presented all the characters of fatty degeneration, but not a trace of the process which leads to atrophy.

But the essential difference between the two forms of disease may be proved by evidence of another kind, which may appear more conclusive to some of our readers who, perhaps, have less confidence than ourselves in the results of microscopical observation. The chronic desquamative disease which causes the disintegration and destruction of the epithelium, and finally extreme wasting of the kidney, is in many cases one of the most insidious of maladies, and it may proceed to the extent of destroying a large portion of the epithelium of the kidney without the occurrence of dropsy or any other formidable symptom; when perhaps, suddenly, in consequence of some accidental cause, the most urgent symptoms of suppressed secretion arise, the patient soon dies, and the kidneys are found wasted, and many of their tubes denuded and atrophied. We have before us the notes of four such cases; one patient was suddenly seized with peritonitis, and died in a few hours, a second died with apoplectic symptoms, a third with delirium and epilepsy, and a fourth with obstinate vomiting, consequent upon suppression of urine. The first two patients were supposed to be in good health until the period of their sudden seizure. In the last case alone had there been any dropsical symptoms, and these were only very slight and transient. In all the cases the kidneys were in an advanced stage of that chronic form of disease which is characterized by denuded and atrophied tubes. In contrast with these cases, which are by no means rare, we place the fact, that, according to our experience, the *granular form* of fat kidney *never* destroys life without the previous occurrence of dropsy, which is usually one of the most prominent and distressing symptoms. Again, we have very rarely met with a case of inflammatory disease of the kidney—such as Reinhardt and Frerichs agree in referring to the first stage of Bright's disease—unaccompanied with dropsy in some degree, and for a variable period. Now, according to the opinion of these pathologists, the kidneys of the four patients whose cases we have briefly mentioned, must have passed through an inflammatory stage, and a stage of fatty degeneration, before they finally arrived at the stage of atrophy; yet, in three of the cases there had been no dropsy whatsoever, and in the fourth case a slight and transient œdema of the ankles—such as might occur in any debilitated subject—had formed the only dropsical symptom. This supposition is so improbable that we should hesitate to admit the doctrine which is based upon it, even without what we consider the conclusive evidence of the minute structural changes in the kidneys. We therefore feel bound to dissent from the doctrine of the oneness of Bright's disease, as propounded by Reinhardt and Frerichs. The apparent simplicity of the doctrine is not in accordance with nature, and it therefore tends to cause confusion. While we recognise an inflammatory form of the disease, we must, for the purpose of diagnosis and prognosis, distinguish between the various kinds of effused products, which are chiefly, besides serum and blood, epithelium, pus, and pure unorganized fibrin. We must distinguish the granular form of fat kidney, which may be a consequence of a previous inflammatory stage, from the mottled form of the disease, which is analogous to ordinary fatty degeneration of the liver, and not a consequence of inflammation. Finally, we must recognise the fact, that the small contracted kidney, although an occasional consequence of an acute inflammatory attack, is more commonly the result of a disease which is chronic from the commencement, and never, as we believe, a consequence or a later stage of either of the forms of fatty degeneration.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 57.

40.—*Phosphate of Lime in Oxaluria.* By Dr. Kuechenmeister.—The author

suffered for four years from chronic diarrhœa, and other disorders of the digestive organs, accompanied with marked emaciation and hypochondriasis. The urine was acid, and very rich in crystals of oxalate of lime; specific gravity, 4·5—5·0. There was no apparent cause for the symptoms. Upon Beneke's advice, the author took daily, lactate of iron, gr. ss.; phosphate of lime, grs. ii.—iii.; carbonate of lime, grs. iv.—vi. After eighty powders, the evacuations became regular, the appetite and the general aspect improved, the oxalic crystals disappeared, and the specific gravity became 2·0—2·5.—*Med. Times and Gazette, April* 16, 1853, *p.* 404.

41.—ON THE NATURE AND TREATMENT OF DIABETES MELLITUS, OR GLUCOSURIA.

By M. Bouchardat.

[The following abstract upon this subject is taken from the review of an article in the memoirs of the French Academy, 1852.]

By the plan which M. Bouchardat now recommends to our notice, in its full detail, he declares that he can cure the majority of cases of diabetes—his test of cure being not only present removal of the sugar from the urine, but the ability of the patient to employ feculent aliments without its reproduction. He, however, requires the intelligent co-operation of his patient, and, above all, the frequent testing of the urine, by the patient himself, as a means of ascertaining progress and guarding against relapse. The means chiefly to be relied upon are those of a hygienic character; and at all events, the power of these should be exclusively ascertained at first, before resorting to any medicinal agents.

1. *Diet.*—As long as the urine exhibits sugar, all feculent and saccharine aliments must be entirely excluded; but the patient need not be confined to what is called an exclusively flesh diet, although this, when not repugnant to him, is the best. Every description of meat, dressed with the usual sauces and seasonings (to the exclusion of flour, however), may be employed; and for those who can get over the prejudice against it, the flesh of *carnivorous* animals, M. Bouchardat says, is best. By proper management (and what cannot a French cook do?) that of the cat or fox becomes a highly relished viand. Several poor patients, who otherwise would have been unable to procure a flesh diet, have resorted to this means with advantage. Fish, in all its numerous varieties, forms a valuable resource for both rich and poor, and may be eaten with abundance of oil and a moderate quantity of vinegar. Eggs, again, so susceptible of various modes of preparation, are excellent; and although milk is forbidden, good fresh cream and all kinds of cheese are allowed. Except in extreme cases, green vegetables and salads, although they contain some sugar, starch, or gum, may be taken in moderate quantities; but abundance of oil, or the yolk of eggs, should be conjoined. For such patients who cannot well overcome their liking for bread and other feculents, M. Bouchardat has, during the last ten years, had prepared a bread of flour containing 70 per cent. of gluten.

As the prohibited feculent and saccharine bodies belong to the respiratory group of alimentary substances, we have to choose others from the same group; and those best calculated to supply their places are fatty bodies and alcoholic drinks. Among the latter Bordeaux wine occupies a prominent place, as much as from one to two *litres* (from two to four pints) being admissible *per diem*, which at ten per cent. of alcohol, would supply about 150 *grammes* (2¾ oz.) of this substance in the 24 hours. Fatty bodies must not be given too exclusively, lest they excite disgust, but mingled with other aliments, from 150 to 200 *grammes* being required in addition to the alcohol. Beer is objectionable from containing dextrine. Coffee, drunk without milk or sugar, and to which a little rum, cream, or brandy may be added, is a good drink. To relieve thirst, Seltzer, Spa, Vichy, or soda water may be taken; but acid drinks, so keenly desired by the patients, are very objectionable. The patient should always eat and drink in moderate quantities, slowly masticating his food. This practice tends to the relief of the attendant dyspepsia, and to assist the distended stomach to return to its normal dimensions. A flannel bandage applied around the epigastrium contributes to the same end.

2. *Clothing.*—As chills operate very injuriously on these patients, warm flannel clothing forms a valuable protective agent, and beneficially excites the languishing

functions of the skin. Indeed some medicinal agents are of no avail unless aided by complete flannel clothing, which maintains diaphoresis. General frictions are very useful, and a moist warmth of the feet should be maintained.

3. *Exercise.*—To recommend this indiscriminately would be injudicious, for many patients are too feeble to undertake it. But when their strength has become somewhat recruited by regimen, walking, gymnastics, agricultural labour, &c., much expedite the cure, and are found, as recovery is approaching, to enable the feculent aliments to become utilized by the system.

4. *Pharmaceutical Agents.*—M. Bouchardat entertains a high opinion of the utility of *carbonate of ammonia* (from 5 to 15 *grammes*—77 to 230 grains in the twenty-four hours), providing flannel clothing be worn. Other *alkalies* suffice for slighter cases, when the urine contains uric acid as well as glucose. Employed consentaneously with out-of-door exercise, they seem to exert great influence in preventing the reappearance of sugar in the urine, when feculent aliments are resumed. *Opiates*, if given alone, are mere palliatives; but when conjoined with other remedies, and in moderate doses, so as to act on the skin, they are very valuable. M. Bouchardat sometimes prescribes Dover's powder, but prefers the old theriaca before all other preparations, without defending the absurd complexity of its composition.

In severe cases of glucosuria, then, diet, exercise, and flannel clothing constitute the basis of treatment, carbonate of ammonia and opiates best aid their action. Other remedies have their occasional uses, such as iron, tonics, chloride of sodium, and antiscorbutic plants. M. Bouchardat often employs emetics at the commencement, and endeavours to modify the disturbed functions of the liver by aperients, of which ox-gall with rhubarb is the best.

Circumstances influencing the effects of Treatment.—Foremost among the *favourable* indications in a case is the *rapid return of the urine to a normal state*, which may take place in from 24 to 48 hours after the feculents have been excluded. The *recent date of the affection* is another highly favourable circumstance; and because it is so, M. Bouchardat urges testing the urine whenever the slightest suspicion can be held, and for the detection of relapses, which are frequent and insidious. Other favourable circumstances are the retention of considerable *embonpoint*, the easy circumstances of the patient, and his being in possession of great perseverance.

The *unfavourable* circumstances are the reverse of the above; but negligence is still worse than poverty, as the poor man has some resources. The treatment of the case is usually ill managed in *hospitals*, owing to the vitiated air, the absence of exercise, the sameness of diet, and the insufficiency of surveillance. The existence of a great *appetite* is a common and not unfavourable circumstance, requiring only moderation in its gratification, at meals not too far separated. *Want of appetite* is a far more unfavourable sign, which should be actively combated. M. Bouchardat has found small doses of rhubarb, and exercise in the open air, of advantage. *Obstinate constipation*, resisting the most varied purgatives, is a bad complication, indicating disease of long duration, which has produced important modifications in the condition of the alimentary canal. Fatty substances, combined with matters which leave residue, as spinach and gluten-bread with bran, are here indicated. *Cold and damp air* is unfavourable to diabetic patients; but M. Bouchardat has had patients from Algeria, and has not derived advantages from sending others to Italy. M. Bouchardat agrees with Dr. Prout in considering the appearance of *albumen* in the urine, which is often met with, as an unfavourable occurrence. The prognosis of saccharine albuminuria is not so serious as is that of simple chronic albuminuria. The frequency of the occurrence of *phthisis* in cases of glucosuria is familiarly known. In all the autopsies the author has made, when the patient has not been cut off by an intercurrent affection, tubercles have been found in the lungs; and he feels convinced that many cases of phthisis have had their origin in a glucosuria that has been overlooked, and which might have easily been removed. In severe and old cases of glucosuria, *vision* is always found more or less enfeebled; but in most cases, when not of old date, as the condition of the patient has improved under appropriate regimen, this amaurosis has subsided. When, indeed, this is not the case, the prognosis of the glucosuria is serious; and it will often be found complicated with albuminuria. *Impotence*, more or less decided, is another effect of glucosuria; but

in young subjects the generative functions resume their power when the original disease is rationally treated. Glucosuria may occur at any *age*, from infancy to senility; M. Bouchardat having met with most cases between forty and fifty. He has met with none between eighteen and twenty-five. Old age does not constitute an obstacle to cure; but so difficult is it to watch over children, that the author is not aware of a sustained cure prior to fifteen years of age. He has met with more male than female patients.—*Brit. and For. Medico-Chirurgical Review, Jan.*, 1853, *p.* 141.

42.—PERMANGANATE OF POTASH IN DIABETES.

By George Sampson, Esq.

[Mr. Sampson remarks, that in some cases of diabetes—long after the sugar has disappeared from the urine—the quantity of the urine remains too abundant, and its specific gravity too low. He has attributed this to imperfect action of the digestive and assimilative functions. To remedy this, Mr. Sampson sought some remedy which would give out oxygen, when taken into the stomach. Chlorate of potash having failed, the permanganate was tried; speaking of which, Mr. Sampson says,]

I have found this medicine of essential service in several cases of obstinate dyspepsia, especially when there existed a profuse flow of urine; its effect in speedily diminishing the quantity of that secretion has been strikingly marked, and has usually been followed by improvement in the general health.

The following case is also calculated to show that the permanganate of potash possesses powers which deserve to be thoroughly investigated:—

A gentleman, upwards of sixty years of age, residing in the country, had for several months been suffering from confirmed diabetes mellitus when I first saw him two years and a half ago. In the course of the twenty-four hours he passed from ten to twelve pints of urine, the specific gravity of which was 1·035 in the morning, and 1·040 in the evening. The patient was greatly emaciated, and he suffered severely from constant pains in the back and thighs, and from increasing debility. After he had perseveringly tried various remedies for nine or ten months without deriving any benefit, I began, in August, 1850, to give him the permanganate of potash in solution, in doses of two grains, which were afterwards increased to three grains three times a day. In the course of a few days a visible improvement took place; he felt better; the quantity of urine began to diminish, and the thirst became less troublesome. These favourable symptoms were soon followed by some return of appetite, and a gradual increase of strength. This amendment went on without interruption; the medicine was continued for three months, until the following November, when all medical treatment was discontinued, as the patient felt quite well, and the urine was reduced to its natural amount. A remarkable fact, must, however, be mentioned, that at that time, notwithstanding the restoration of the general health, the urine still contained a considerable quantity of sugar. I am not aware whether this state still exists, but the patient's report to me a few days hence ran thus:—"I pass less than a pint of urine during the night, somewhat more during the day; the pains are gone, and I can walk a fair distance without fatigue."

The dose of permanganate of potash which I have generally found to agree best with the stomach, is from one to three grains in solution, and it should be given in three or four tablespoonfuls of water, three times a day, shortly before meals.—*Lancet, Jan.* 8, 1853, p. 42.

[The following remarks by Mr. Sampson are supplementary to the above statement. He says,]

In that communication I specified two or three grains of that salt as the dose which appeared to agree best with the stomach; but I have since ascertained that a larger quantity may generally be administered without inconvenience. For instance, a patient for some months past afflicted with diabetes, commenced the use of the permanganate, six weeks since, in doses of two grains; but he is now taking eleven grains three times a day, and is rapidly advancing towards recovery.

There is, however, considerable diversity in the tolerance of the medicine evinced

by different individuals. In two patients, for example, suffering from dyspepsia, it became necessary to restrict the dose, nausea being produced, in one instance, by nine grains, and in the other by six grains of the salt.

My experience leads me to the conclusion, that the best plan is to begin with two or three grains three times a day, and to add one grain to each dose every third day, unless it be found to disagree.

The effect of the permanganate is remarkable in speedily removing the thirst from which diabetic patients usually suffer so much; and although during the use of the remedy a brown fur is sometimes formed on the tongue, this appearance is not accompanied with dryness of the surface, and is not therefore to be regarded as an objection to the continuance of the medicine.—*Lancet, Feb.* 19, 1853, p. 189.

43.—*Strychnine in Incontinence of Urine.* By DR. PANEL.—A man suffered from incontinence of urine for five months, in consequence of paralysis of the neck of the bladder, brought on by being disturbed in micturition. The urine flowed from him in drops. After the fruitless administration of strychnine internally, a solution was injected into the bladder (0·50 centig. of strychnine to 500 centig. of water).—*Journal de Bord.—Med. Times and Gazette, Feb.* 5, 1853, p. 147.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS.

44.—ON THE TREATMENT OF FRACTURES OF THE FEMUR BY A SIMPLE MODIFICATION OF LISTON'S SPLINT.

By R. G. H. Butcher, Esq., Surgeon to Mercer's Hospital, Dublin.

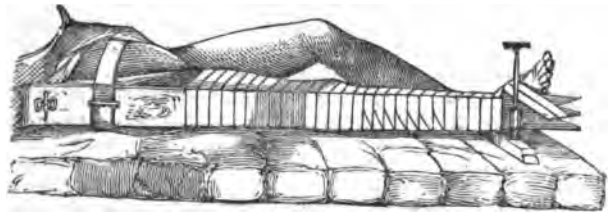
[Many and various have been the methods adopted for the treatment of cases of fracture of the femur. The plan of Mr. Pott,—that of placing the patient on his side, and bending the thigh on the pelvis, and the leg on the thigh,—is now repudiated by most surgeons. The principle in the cumbersome machines of Desault and Boyer, with their numerous additions and improvements, was a correct one, viz., that of maintaining permanent extension. The apparatus of Josse, Meyer's machine, Physick and Houston's apparatus, as well as that of Alban, were all intended to carry out the same intention. Mr. Butcher, however, observes,]

Of all methods of treatment, that by the simple contrivance of Liston, modified, as I shall presently notice, is the most comfortable to the patient, preventing eversion, shortening, and deformity; and the mechanism is so applied, that the trunk, pelvis, thigh, leg, and foot constitute one rigid body, which may be moved entire, but the component parts of which being immovable, *inter se*, preserve the same mutual relation. I have proved the advantages accruing from the appliance of this splint in every form of fracture to which the thigh bone is liable from without the capsule to the lowest part of its shaft. And, had I wished to transgress the bounds which I have marked out for myself in this paper, I could easily have given cases where it proved of most essential service in steadying the parts in fracture of the cervix femoris occurring in old subjects; as also in soothing and allaying the spasms consequent upon ulceration occurring in the cartilages of the knee and hip joints.

Liston gives the following description of his splint, and directions for its application:—"The apparatus consists of a plain deal board, of a hand's breadth for an adult, and sufficiently strong; narrower and slighter, of course, for young patients. It is made to suit the particular subject of the injury, to extend from opposite the nipple to three, four, or five inches beyond the sole of the foot. It is perforated at the upper end by two large holes, and provided with two deep notches at its other extremity; a sufficient hollow or perforation is made opposite the malleolus. A pad of corresponding length and breadth is attached by a few pieces of tape; a roller is split at the end, and having been tied through the openings in the top part of the splint, is unrolled so far, and fixed for a time to the lower end of the pad. Reduction having been effected by a little gentle and continued extension of the limb, while the pelvis is fixed, the position is preserved by an assistant placing one hand over the dorsum of the foot, and the other upon the knee; a narrow roller is applied from the toes to a little below the site of the fracture, with a moderate degree of tightness, to prevent infiltration of the limb, in consequence of pressure by the perineal band, which is now placed under the patient: it consists of a large soft handkerchief or shawl, containing the necessary quantity of tow or wadding, and covered with oiled silk. The splint is then laid along the outside of the limb, and the roller already spoken of is passed under the sole of the foot, and turned round the ankle and heel. These parts are previously thickly padded with tow, cotton, wool, or wadding, to prevent the painful effects of pressure, as upon them the resistance to the extension principally falls. The roller is carried repeatedly through the notches in the end of the splint, as it is crossed over the dorsum of the foot, and ultimately turned round the limb to near the groin. The object in pursuing this plan must be apparent: by the attachment of the end of the roller, and its subsequent arrangement, the apparatus is prevented from slipping upwards, and is made, as it were, of a piece with the limb. The ends of the perineal band are passed through the perforations, drawn with moderate tightness, and firmly tied; and a few turns of a broad bandage round the pelvis and chest complete the proceeding."

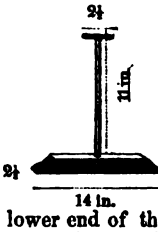
Numerous disadvantages are laid down by writers, as resulting from the use of Liston's splint. It is stated that permanent eversion is likely to occur; that inversion of the foot, knee, and lower fragment may take place, the result of rotatory displacement; that much of the force necessary for extension is lost, owing to the obliquity of the counter-extending belt; that the ankle and groin are likely to suffer from pressure; that the pressure made across the groin causes great œdema of the whole limb, in consequence of the obstruction which is caused to the circulation in the inguinal veins and absorbents; and lastly, the objection made by Earle, that the limb being bound to a perfectly straight body, placed at the outside of the thigh, and considerable pressure made on the inner side of the knee in fractures of the shaft of the bone, tends to destroy the natural obliquity of that part, and bring it more into a straight line, which he states is not only destructive to the symmetry of the limb, but impedes progression, and renders the erect posture less secure. No doubt some of these untoward results arise from an inefficiency in the splint to accomplish all that is required, while others are created by its not being properly adjusted. To remedy these defects, I offer to the profession a modification of the splint, that which I have been in the habit of using, and, as proved by the foregoing cases, with the very best results. I am happy to say it has met with the warm approval of my colleague, Mr. Tagert.

The alteration is very simple, and consists in the addition of a piece of wood placed in a transverse direction beneath the lower end of the splint, and upon which its edge rests. The splint is steadied in this position by means of a long screw conveyed through a socket riveted vertically on the side of the splint. The upper end of the screw has fitted to it a brass handle placed across, while the lower end terminates in a cylinder which is received into the centre of the piece of wood, and fastened in a hollow beneath by means of a nut and washer. The cylinder, as contrasted with the screw, is somewhat contracted, and presents at its commencement a shoulder which rests upon the steel plate on the upper surface of the transverse piece of wood, while the remainder moves freely in the tube for its reception. From this it must follow that, by a few turns of the screw, the splint may be elevated or depressed at pleasure. Another advantage resulting from this mechanism is, the facility with which the splint can be reversed, the screw changed, and its adaptation to either limb effected.



4 ft. 4 in.

The plate shows the proportions to be observed in the form of the splint. It may be made of seasoned pine; its length, as will be seen presently, must be in accordance with the height of the patient. The length of that represented in the drawing measures four feet four inches; the widest part at its upper end being four inches and a half, which gradually diminish downwards to three inches and three-quarters opposite the ankle. It is eight lines thick, and is deeply notched at the lower end to the depth of four inches; while it is pierced at the upper by two circular holes, two inches and a half apart. There is cut in the lower end of the splint, corresponding to the outer ankle, an oval aperture, the centre of which is



eight inches and a half from its extremity; and the socket for the screw is placed midway between its circumference and the acute angles formed by the notches. The length of the transverse piece of wood is fourteen inches; its breadth two inches and a half, and its depth two inches. The height of the screw above it measures eleven inches; and the length of the cross handle two inches and a half. A long cushion, somewhat wider than a splint, is applied to its inner surface, and extends from the apertures above to a point opposite the attachment of the screw. This cushion is retained in position by four straps and buckles; it is stuffed with horse-hair, and perforated for the reception of the ankle. The corresponding hole in the splint has tacked into it a pad, softly filled with a like material, and covered with chamois leather.

The application of the apparatus, modified as I have described, is almost exactly in accordance with the directions given by Liston,—the screw and transverse piece of wood being detached, the splint is applied in nearly a similar manner; there are, however, some cautions to be observed in its adjustment which he has not adverted to, yet a strict observance of which I consider absolutely essential, that the same satisfactory results may be obtained as followed in the embarassing cases that I have detailed.

First, as to the preparation of the splint, and the guarding of the ankle from pressure. It has been stated that the splint is perforated, and has, adapted to the aperture, a soft chamois cushion; that a suitable pad extends along its inner surface, with a similar opening for the reception of the outer malleolus; but this is not enough; there is also an additional pad, of variable thickness, required to lie between the outer surface of the knee and the padded splint; or, in other words, to fill up the space between them occasioned by the natural obliquity of the thigh bone, this, of course, from the breadth of the pelvis, greater in women than in men. The next point is, that the limb should be drawn down to its full length, the broken bones co-apted and retained so by assistants, the ankle, heel, and dorsum of the foot rolled with soft wadding, the depression above the outer malleolus obliterated by additional folds of it, and the entire supported with a roller neatly applied from the toes to above the knee; then the ankle may be lashed to the splint, the surgeon taking care that the turns of the bandage be even above the ankle, and secure the heel close to the splint; if this be correctly done, eversion of the foot will be prevented. The ankle being thus fixed, and extension at the same time fully kept up, the perineal band is to be applied; this lac must be made of soft material and well stuffed, at the same time that a strong piece of tape is stitched along its entire extent, from one end to the other, to prevent its yielding; in its application care should be taken that it lies evenly up against the ramus of the ischium and pubes, that when the ends are brought through the holes at the upper part of the splint to be tied, they may be drawn on with an equal force; because otherwise the integuments will be wrinkled, and quickly excite much irritation. Until the lac is tied the required extension should be kept up by an assistant at the ankle, so as to obviate the reprehensible practice of thrusting the splint with the lower part of the limb downwards; for if this manœuvre be employed, the folds of the bandage connecting the splint to the ankle are more or less altered in their direction: they no longer lie even, their upper edges constrict the part, and the skin is unevenly strained; if so, it soon irritates, inflames, and becomes so exceedingly painful that the patient demands the removal of the dressings altogether. The great advantages obtained from the length of the splint being preserved can be appreciated when the lac is applied; counter-extension is directed exactly as the extension, in the most favourable line,—the axis of the thigh bone; because, as before noticed, its inclination is slightly inwards; from this direction then it follows that not a particle of force is misdirected or lost. Again, with regard to the holes for the reception of the ends of the counter-extending belt, I have mentioned they should be two inches and a half apart, or, more correctly, close to the edges of the splint; this favours the proper axis of traction, and takes the pressure from the trunk before and behind. From preserving the full length of the splint greater advantages still flow. In fractures of the thigh-bone, approximating the hip-joint, the upper and lower fragments cannot be pressed upon and forced out by the perineal belt, because its action is directed upwards; this occurrence may take place if the splint be short, and applied as is usually represented in books; but if adjusted as originally intended by Liston, and according

to the directions I have given, no such untoward result can follow. Besides, the pressure of the perineal bandage occasions no uneasiness when directed upward; while on the contrary, if strained outwards across the groin to reach the splint, undue pressure is made on the tender integuments, veins, and numerous lymphatics of this region, and, above all, against the sharp edge of the abductor muscles. The foregoing objections fully apply to Boyer's splint; the pressure of the counter-extending belt cannot be borne, and it must displace the fragments if the fracture be situated high up. After the requisite extension has been secured, the next step is to turn a roller round the limb and splint, commencing at the ankle and continuing it to about the centre of the thigh; during this proceeding it is necessary that the limb be fairly supported, and not permitted to gravitate backwards. A few turns of a wide bandage are likewise made to encircle the trunk and upper part of the splint, and pinned to the counter-extending belt before and behind it. It only remains now to pass the screw through the socket, and attach to it the transverse piece of wood in the manner already described, and the apparatus is perfected, so as altogether to preclude the possibility of inversion or eversion of the foot or lower fragment. It will be observed, by a reference to the plate, that the splint is raised at its lower end from the mattress, by the depth of the transverse piece of wood, and a thin pad fills the intervening space. By this arrangement the foot is somewhat elevated beyond the rest of the limb, and the returning circulation favoured.

Frequently, when a patient is under treatment for fracture of the thigh by the ordinary method with the long splint, he will complain of pressure at the heel, owing to the limb resting for a length of time on its posterior surface; this unpleasant contingency is entirely obviated by the simple employment of the screw as applied by me; for by a few turns of it any required elevation may be attained, and another annoyance is likewise removed by the transverse handle bearing off the weight of the clothes from the foot. Lastly, from the treatment by continued extension, as I advocate its application, I have never seen troublesome abrasions, relaxation, or weakness of the ligaments of the knee or ankle-joint to result.—*Dublin Quarterly Journal of Med. Science, Feb.* 1853, *p.* 30.

45.—ON A SPLINT FOR FRACTURES OF THE LOWER EXTREMITIES.

By Dr. N. Highmore, Sherborne.

[Like many other practitioners, Dr. Highmore has sometimes met with compound fractures of the leg almost impossible to reduce satisfactorily, and has seen the most violent constitutional excitement ensue in attempting to produce such a result. A new splint which he has had made for such cases as these would seem to possess the following advantages.]

The limb can be placed either in the bent or straight position. Powerful extension can be kept up by means of a screw from the centre of the bottom of the foot, and in a line with the tibia, whilst the ankle and the knee-joints can be kept in any desired state of flexion or extension. A wound can be dressed on either side, or at the top, as often as may be required, without at all disturbing the limb, the bandages and splint remaining firm, and all lateral movements prevented. This is effected by having the sides to let up and down as required, the hinges being so made by a hook and eye that either can be taken off and put on again whilst the limb is completely bandaged, or one side only may be applied so as to admit of poulticing on the other.

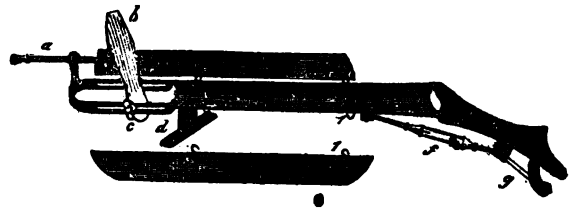
I subjoin the following cases:—

C. P.——, of sober and temperate habits, aged 58 years, fell under a cart which he was driving on the night of the 12th of March, 1851, and the wheel passed over his right leg, producing a fracture of the tibia and fibula. The fracture of the tibia was obliquely transverse, just below the middle of the bone, with great deformity, from the sharp anterior portion of the lower end projecting upwards under the skin, and there was a wound on the inner side of the leg about the size of a fourpenny piece communicating with the fracture, but not corresponding with the deformity, and no bone protruded through it.

The limb was immediately placed on Liston's splint, and extension made to bring the fractured ends of the bones into apposition, and restore the straight line of the skin. This, however, it was found, could not be accomplished with all the force that it was considered justifiable to use; the sharp edge of the lower portion of the tibia *sticking up* under the skin, and resisting all our attempts to reduce it. It was, however, approximated as nearly as possible, and the wound being covered with lint, saturated with blood, it was left at rest.

During the following week two other ineffectual attempts were made to reduce the bone. Suppuration had now commenced in the wound; great constitutional disturbance was set up; the whole leg became inflamed; and it being evident that the end of the bone would ulcerate through the skin, I made an opening from the wound at the side entirely across the tibia, which immediately relieved the tension, and I applied a linseed-meal poultice over the whole.

On the 29th I extricated a piece of bone from the wound, rather larger than the finger-nail, and on the 10th April another piece, both being evidently splinters broken off at the time of the fracture. Suppuration was then going on extensively, with fever, diarrhœa, and great prostration of strength, and there appeared every probability that the man would sink unless amputation was performed, and this he had from the first declared he would never submit to.



a, Extension-screw from the centre of the foot. *b*, Foot-board. *c*, Screw to regulate flexion or extension of ankle-joint. *d*, Support of the splint at the bottom, with rule, joint, and pin to fix it. *e*, The moveable side-pieces. *f*, Screw to regulate flexion or extension of knee-joint. *g*, Support of the splint at the upper end. The use of this is to compensate for the difference in length of the thigh-piece and the thigh of a man, which prevents it (in Liston's splint) from resting on the bed without producing undue pressure on the integuments of the thigh. *i*, Hook and eye to fix on the side pieces. This splint can be seen and procured of Mr. Matthews, surgical instrument maker to King's College Hospital, Portugal-street, Lincoln's Inn.

Finding, then, that the only chance of saving him was to apply a splint that would fully admit of dressing the wound, whilst lateral support could be given on the sound side, steady extension kept up, and the lower extremity of the tibia at the same time kept down in its place by a fixed flexion of the ankle-joint, and never having seen any apparatus that would effect all these objects, I went to a smith here, who made the splint, now figured, under my direction, and which has answered its purpose so fully that I do not hesitate to recommend it to the profession. It was applied on the 14th of April; steady extension was kept up by the screw at the bottom; the wound was regularly dressed by removing one side-piece, without in the least disturbing the other or unbandaging the limb. The patient began at once to mend; four pieces of loosened bone were removed, and he recovered with a very fair and useful limb. The splint was discontinued on the 23rd of June, when a starched bandage was applied, and the man allowed to get up.—*Lancet, Feb.* 19, 1853, *p.* 173.

46.—ON FRACTURES OF THE THIGH.

By James Terry Hester, Esq., Oxford.

[When the body is elevated or depressed, as in a sitting or lying down posture, the relative position of the thigh to the trunk is altered. Hence, in treating fractured thigh, the patient should be placed in such a bed that this change of relation may be avoided. Mr. Hester has contrived such a desideratum, resembling in its appearance an easy reclining chair, but with a slide upon that part on which the

about with the aid of crutches, which, on the 10th of August, he changed for two crutch-handled sticks, with which he could walk for an hour without fatigue. On the 30th of September he returned to town and resumed his ordinary pursuits, and has since never felt any inconvenience. The author has been unable to find any record of a case of fracture of one of the larger bones by the action of the muscles alone, without the occurrence of any fall, blow, violent exertion, or other exciting cause. He is but fifty-six years of age; has led a perfectly regular life; is capable of considerable exertion; he is not aware of any hereditary tendency to disease, such as cancer or scrofula; he has never had syphilis, nor has he ever been salivated. This case, then, he considers to stand alone, and to be worthy of record.

[In speaking of the swinging apparatus employed in the case, Mr. FERGUSSON expressed his opinion as to its value in cases of fracture of the femur as well as for fractures of the leg, for which latter it had been commonly employed. He had also a high opinion of its use in disease of the knee-joint. Mr. LUKE objected to its employment in fractured thigh, because the two extremities of bone could not be always kept on the apparatus. Mr. HODGSON remarked upon the comfort and convenience of this form of treatment in another class of fractures, namely those of the patella.]—*Lancet*, *Dec.* 25, 1853, *p.* 591.

49.—CASES OF EXCISION OF THE KNEE-JOINT.

Under the care of W. FERGUSSON, Esq., F. R. S. (Reported by MR. MACAULAY.)

[For some time past we have detailed cases showing the tendency of the surgeon to save the amputation of limbs in some serious affections of the joints. Although this is a gratifying contrast to the recklessness with which they used to be removed, still the period of cicatrization by the new method is very long—a twelve-month elapsing before the result is produced. Compared with the slow chronic cases of diseased joints, to be sure, this period cannot be looked upon as a very long time. In the elbow, the ankle, and shoulder the patient has not suffered dangerously from the early effects of the operation. The same remark, however, can by no means be applied to that of the knee-joint. Mr. Fergusson has, however, recently excised even the knee-joint, and although the ultimate result cannot, of course, as yet be ascertained (the case being still under treatment), yet it is satisfactory to find that so far it has proceeded favourably. The patient was a young woman, aged about 20, unmarried, accustomed to kneel a great deal. Some time before admission, a swelling in the knee made its appearance, and on its increasing two issues were made on each side of the joint. Four months after admission, an opening was made into the joint, and half an ounce of serous turbid fluid evacuated. On a further examination under chloroform, extensive disorganization was found to exist, and eleven days after this.]

Chloroform having been administered, Mr. Fergusson made an exploratory puncture into the articulation, by which a considerable quantity of turbid serum was freed. On passing the finger into the joint the articular surfaces were felt rough, and denuded of their cartilage. Mr. Fergusson now made such incisions as would bring, the joint into view, and allow him either to take off the thigh at the lower third, or excise the joint, according to the state in which the parts would be found.

These incisions consisted of two lateral ones carried longitudinally on either side of the joint, and a transverse one, uniting the two lateral cuts, about two inches below the patella. A flap was then raised from the front of the joint in the manner of a lid, the hinge of which was situated about the middle of the lower third of the thigh. The patella was of course attached to this flap, and presented, when the latter was turned up, its posterior or articular surface. The joint exhibited considerable thickening of the synovial membrane, with sero-sanguineous secretion from the ulcerated cartilages. Under these circumstances, Mr. Fergusson resolved to make an attempt at saving the limb, and removing the processes of bone entering into the formation of the joint. The condyles of the femur and the head of the tibia and fibula were sawn off, the instrument cutting very easily through the soft and adipose cancellous structure; the patella was then easily dis-

connected from the flap in which it was fixed; the projecting masses of thickened synovial membrane were pared and a few vessels tied.

The hemorrhage was altogether very inconsiderable. Mr. Fergusson now placed the cut extremities of the femur, tibia, and fibula into apposition; but in doing this, he found that the flap originally made was too long; a portion of it, about one inch and a half in depth, was therefore cut off transversely. The wound was closed with sutures; and large pieces of lint, damp with cold water, secured by a roller, were applied to the joint. The patient was placed in bed, the limb lying on a straight channelled splint with foot-piece, being gently supported by Salter's swing, and so adjusted as to be somewhat raised.

After the operation, Mr. Fergusson said that he had found the joint in as diseased a state as he had anticipated. He had now availed himself of a great improvement in practice, which was founded upon statistical data. The manner in which the joint had been brought into view, would have allowed him to perform amputation, if such an operation had been found necessary. Mr. Fergusson hoped this case would prove successful; and he had some reason for the view he was taking, since three out of seven cases on record had terminated favourably. Mr. Jones, of Jersey, had been fortunate in this operation; but even on general principles, and from what we now knew of excision of joints, the procedure was justifiable. He (Mr. Fergusson), as the pupils could recollect, had had an unsuccessful case of this kind (the 'Lancet,' vol. ii., 1850, p. 133); but he thought he had done more for this girl, whose health is still robust, than if he had performed the easier operation—namely, the removal of the limb.

On examining the excised processes of bone, it was found that the articular surfaces of the femur and tibia were bared of cartilage, except in a very small spot, the patella being in the same condition.

Nine o'clock, P.M.: The patient has been kept under the influence of opium, and is not in very great pain. A slight oozing of blood. Pulse 146, soft. The girl has been slightly sick.

Second day.—One P.M. The patient is not in much pain; pulse 176, weak; tongue white and moist; the bandage was cut through, though the wound was not tense, and no blood was found in it.—Ten o'clock P. M.: Pulse 140; respiration easy; the edges of the wound were being covered with lymph. The patient has again been sick; she takes egg and brandy in teaspoonfuls, to allay the gastric irritability. There has been pain and slight starting of the thigh.

Third day.—Pulse 144; breathing easy; has been slightly sick again; no pain in the thigh or knee; more action in the wound. Continue the egg and brandy.

Fourth day.—This morning the girl is more cheerful; pulse 120; she takes some clear soup, which she keeps down. Suppuration has commenced.

Fifth day.—Very comfortable and cheerful; there is not much pain in the knee. She continues the gravy soup and eggs. The dressings and splints were now changed; the skin which covered the patella (being very thin) has slightly ulcerated; there is a plentiful discharge of pus; the stitches were removed.

Sixth day.—Rather feverish; she does not fancy her food; the bowels have not been opened since the operation. An enema was given, and came away untinged. In the evening an ounce of castor-oil was administered, and an evacuation was obtained an hour afterwards.

After this period, the patient went on improving. On the fifteenth day, Mr. Lawson, the house-surgeon, fitted the limb in a box, and slung the whole as before. The bowels became quite regular; and on the 21st day the ends of the bones were in close apposition, and covered with healthy granulations, the external wounds being rapidly advancing towards cicatrization; pulse 104.—*Lancet, Dec. 4th, 1852, p. 518.*

[The following is another case of excision of the knee-joint by Mr. Fergusson. The patient, 28 years old and unmarried, had, eleven years before admission, suffered slightly from that affection of the knee-joint commonly termed "Housemaid's Knee." These attacks gradually became more frequent and severe, so that she remained at one time three months in the London Hospital. A year after this she suffered a still severer attack, which, up to the date of her admission, had gradually become more intense. At this time there was distinct evidence of extensive

ulceration of the cartilages of the knee-joint, and the health of the patient had of late been very declining.]

Mr. Fergusson used for several months the means best calculated to give the patient relief; strapping, counter-irritation, rest, tonics, &c., were successively tried, but did not induce any favourable change in the articular malady. No external signs of diseased joint were, however, observable, such as fistulous apertures, &c.; in fact, no abscess had ever opened outwardly, and it was evident, in spite of the continual pain, that the acute stage was quite over. Mr. Fergusson, however, despaired of the cure, and it was clear that many years must elapse before any relief could be obtained. Amputation was therefore proposed to the girl, but she refused; and preferred running the chances of excision of the joint, which chances were made plain to her. Mr. Fergusson told her, in fact, that he could not foresee the results of the operation, and that it might be favourable or the reverse.

On the 2nd of April, 1853, the patient was brought into the operating-theatre, and placed under the influence of chloroform. When the anæsthetic agent had produced its full effect, Mr. Fergusson made a longitudinal incision on each side of the joint, about four inches in length, and nearer to the posterior than the anterior part of the articulation. The extremities of these incisions were about on a level with the condyles of the femur and the articular surfaces of the tibia. From the centre of the internal line of incision the knife was carried across the joint and over the patella, by which cut the letter H was completed. Mr. Fergusson then dissected the two flaps thus prepared, upwards and downwards, the patella adhering to the upper flap, and the joint became thus exposed. The knee was now forcibly flexed, and the adhesions which had already taken place between the articulating surfaces were heard to give way as the flexion was made. Mr. Fergusson now dissected away the tough fibrinous layers which had been thrown out around the condyles of the femur, divided the lateral and crucial ligaments, and sawed off the lower extremity of the femur just above the condyles. The articular surfaces of the tibia were now likewise cleared, and about an inch of the upper part of the bone removed by the horizontal action of the saw. During these steps of the operation Mr. Fergusson had to take away from the concavity and crevices of the joint a concrete substance looking like wet mortar, which was considered as strumous matter deposited in the articular cavity.

There was very little bleeding, and when the lower extremity of the shaft of the femur was examined, it was found that the periosteum came off very easily. Mr. Fergusson thought it prudent to remove about an inch and a half of the denuded bone. The patella, still attached to the upper flap, being eroded on its articular surface, Mr. Fergusson removed it likewise. The flaps were now brought together, secured by sutures and adhesive plaster, and covered with lint wetted in cold water. A splint with hinged sides had beforehand been prepared, and the limb was carefully placed in it, protected by pads covered with oil silk.—*Lancet, April* 16, 1853, *p.* 368.

50.—CASES OF EXCISION OF THE ELBOW JOINT

Under the care of W. Fergusson, Esq., F.R.S.

[In the first case, reported by Mr. Hulke, the patient, a sailor, had dislocated his left elbow joint, by a fall from the mast-head. A surgeon told him it was a sprain, and gave him an embrocation. Nine months after he became a patient at St. Bartholomew's, but obtained no relief. He now went to Liverpool, where the joint was most violently treated, and so great was the force employed, that the ulna was broken at the union of the middle with the upper third. One year and seven months after, Mr. Cock divided the triceps, but without benefit. Mr. Wakley, at the Royal Free Hospital, afterwards made incisions at the back of the joint, and divided the flexor tendons. The patient, by this last measure, obtained a little power over flexion.]

On admission into King's College Hospital, under the care of Mr. Fergusson, the state of the arm was noted as follows:—There is flatness behind the elbow-joint, across the condyles of the humerus; below this the olecranon is un-

usually prominent; the ulna and humerus are anchylosed, and the former bone seems to have been luxated backwards. The head of the radius rotates freely, and is farther than natural from the outer condyle.

As the patient was very pressing as to something being done to make him regain a partial use of the joint, Mr. Fergusson consented to the re-section of the articulation, which operation took place, October 9th, 1852.

The patient having been completely narcotized with chloroform, Mr. Fergusson made an incision in the shape of an H at the posterior aspect of the elbow. The tissues covering the bones were reflected, and the ulnar nerve dissected out, and held aside with a blunt hook. The articular end of the humerus was sawn nearly through, and then divided with the bone-forceps; the upper extremity of the ulna and the head of the radius were removed in the same manner.

The anchylosis was found complete, the ulna and humerus having thoroughly united. The bones were very much enlarged and indurated, and to such a degree that they offered considerable resistance to the saw. A few ligatures were applied, the arm placed in a flexed position, the wound closed with stitches, and covered with water dressing.

Mr. Fergusson, in offering a few remarks, said that the case presented unusual interest, since the operation had been performed upon a joint already anchylosed. Still the arm was of so little use to the patient, that the latter had been very desirous that some procedure should be adopted to improve the state of the joint. He (Mr. Fergusson) had performed, in this instance, an operation somewhat similar to that adopted by Burton, in the United States of America. The operation consisted in taking off a wedge of bone from the articulation, the thin portion of it lying posteriorly. Burton had done this for the knee-joint. The patient was prepared to lose his arm, but Mr. Fergusson preferred trying the operation which had just been performed; it would, very probably, give the man a tolerably useful limb. The hardness of the bone, which rendered the sawing somewhat more laborious than usual, was probably owing to the great excitement which the part had been subjected to by the numerous operations which had been performed upon it.

Three days after the operation, the arm was placed in a rectangular splint.

On the fifth day, the pain, which, for the first two days, had been very severe, considerably abated. There was some numbness of the little finger and the contiguous side of the ring-finger.

The patient progressed extremely well; the wound was almost healed on the thirty-third day; there was then a slight power of flexion of the fore-arm upon the arm; and when the man was discharged, six weeks after admission, the action of the joint was sufficient for most ordinary purposes.—*Lancet, Dec.* 4, 1852, *p.* 520.

[The next case was one of long standing, having existed for at least seven years. It was in a woman aged 44. It had run through the usual course—inflammation, suppuration, destruction of cartilage, &c. Before her admission, however, fresh disease had set up in the joint, and the health became completely broken down. In spite of various remedies, the patient got worse, and it was evidently necessary that some operation should be performed.]

The question here was, should amputation of the arm be performed, or should excision of the joint be had recourse to? I believe it was a case where many surgeons would have performed amputation of the upper arm, because I am aware that it is done in cases even of disease of the elbow-joint in young persons; but here the patient was beyond that age at which it was customary to put this proceeding in force. It is considered that excisions are not so likely to be attended with success in persons of mature age, and in elderly people, as in those more youthful. However, taking all things into consideration, I thought it better to perform excision of the elbow-joint, and I accordingly did this, May 29th, in the ordinary manner; the ends of the bones were in a much diseased condition. The circumstances were very unfavourable here, and I am aware that remarks were made by some persons at the time, to the effect that the operation of excision was extraordinary treatment. These were not intended for my ears, but nevertheless they did reach them. I do not wonder at remarks of this nature coming from individuals who know little or nothing about excision of joints. Those who are familiar with the nature of these operations, and who in reality understand this

branch of surgery, do not indulge in depreciatory observations, or, at all events, if they do, they keep them to themselves.

Well, time has proved the correctness of the decision come to in reference to this case; for, although the convalescence was tedious, and great care was required in dressing the wound, the patient progressed most favourably, and we had an opportunity the other day of seeing how well the case has turned out, and what good position the arm is in. The parts were kept, after the operation, in such a position that, should anchylosis occur, there would be a right angle at the elbow. It was not thought likely that a good false joint could be formed here at the patient's advanced age, and therefore there was not any motion allowed; nevertheless, there is now a false joint, and she has now a tolerable use of her fore-arm and hand. Altogether the case may be looked upon as creditable to surgery, and as a good illustration of that which is so aptly termed Conservative Surgery.

The next case is also one of diseased elbow-joint. The name of the patient is Anne Gough, a woman aged 30, who was admitted about a fortnight since into the Victoria Ward. She had been suffering from a disease of the right elbow joint for two years, which had been treated by various methods, but benefit had not accrued. When she was admitted, the appearance of the joint was just such as is observed in cases where there is very serious disease, although there was not any sinus or fistula. It might have appeared to those who saw it, that there was not so much disease here as in the other case, where there were several sinuses; but I felt certain that the morbid condition was very great. I therefore excised the ends of the bones on November 27th, and here (showing the excised parts) you see them. You can hardly recognise the ends of the radius or ulna, and the lower extremity of the humerus is in a very diseased state. This patient has been doing very well indeed, and, as she is so much younger than the other, I shall by and by permit some gradual motion, in order that a false joint may be formed.

The next and last case in which the operation of excision of the elbow-joint has been performed is one of so interesting a character that I must detail it at somewhat greater length to you. The principal features of the case are detailed in the books as follow:—

"George Gaskin, aged 34, a sailor, was admitted into the Albert Ward, at the end of September, with a distorted condition of the left elbow. It appears that while at sea, on the coast of South America, some seven years back, he fell from the rigging of his vessel, and injured his elbow. According to his own account, it was at that time dislocated. Unfortunately for him, there was not any surgeon on board of his ship, and it was not until after some days that he had any professional advice. He then saw a surgeon, who told him he had merely sprained his arm, and that an embrocation would put it all right.

"After his return to England he went first to St. Bartholomew's Hospital, where attempts were made to put the joint into a more useful position, but they were not attended with any success. The fore-arm was now nearly on a line with the upper arm, and of course it was very inconvenient to him. He now consulted a quack surgeon in the north of England, who tried by various manipulations to remedy the distorted state of the limb by using powerful flexion, and he succeeded in altering its position; but with this state of things the patient became dissatisfied, and allowed the limb to be violently extended. By these means combined, a certain amount of improvement was brought about. Some time after this he again submitted himself to some more severe manipulations, which ended in producing a fracture of one of the bones of the fore-arm.

"Some time afterwards he applied to a surgeon in his native county, who tried hard for a long time to alter the position of the limb, but he did not effect any melioration. The patient subsequently came again to London, and placed himself under the care of one of the surgeons at Guy's Hospital. This gentleman made an attempt to get the arm out of its extended position by cutting across the triceps, and afterwards placing the limb in a certain position, but no good was done by this measure.

"The man then left this institution and entered the Royal Free Hospital, where various incisions were made about the joint, and the flexor tendons were divided. However, the arm remained in the same position. He was afterwards admitted into King's College Hospital.

"The fore-arm was nearly in a line with the upper arm, and the elbow-joint presented the appearance as though some of the bones had been knocked out of place. The olecranon process was very prominent, and the ulna and humerus were perfectly anchylosed, but the radius was movable on the humerus; there also appeared to be great thickening of the bones. The limb was totally useless to the man from the unfortunate position in which it was retained, and he was willing to undergo any mode of treatment which would promise to bring it into better adaptation for use. Mr. Fergusson, therefore, determined to excise the joint, and afterwards to place the fore-arm at right angles with the arm, and keep it in that position. Accordingly, on October 9, the patient was placed under the influence of chloroform, and the ordinary incisions in excising the elbow-joint were made, and the ends of the bones were cut out. There was great difficulty in the operation in consequence of the enormous thickening of the extremities of the bones. The arm was placed in a flexed position."

Now, you saw that this man's arm was in such a position before the operation that it could not be of any use to him whatever; and there was, moreover, extensive exudation of new bone, the result of injury or disease. The joint had been cut into by other surgeons, incisions had been made, and tendons had been divided without any definite object, or without doing any good, and, indeed, it could not be expected that these measures would do any good. When he appeared here it struck me, that if I were to excise the extremities of the bones, it might have the effect of permitting us to place the limb in a position in which it might be of some use to him. Well, after I had done the operation, I took care to order, that in a short time a little motion might be encouraged in order to bring about a false articulation, and you now see the result. The arm is in capital position, the wounds have healed up, and there is a limited motion in the joint. He certainly does not move the joint so freely as I could have wished, because there is a deal of thickening about it, but you saw how enormously the ends of the bones were enlarged when I took them away, and this may possibly account for there being less motion than we usually see in instances of false joint after resection here.

I have not heretofore had an opportunity of doing an operation of this nature with the same purpose in view before, and, in this instance, I was led to adopt this mode of proceeding from what I saw some few months ago whilst I was in Edinburgh. There was a case of anchylosed elbow-joint in the Royal Infirmary there, under the care of my friend Dr. Richard Mackenzie, and it was proposed, in that case, to extirpate the joint. In the course of a week or two afterwards I found that Dr. Mackenzie had performed this operation with the very best results; and I believe that there are many cases in which a similar mode of treatment might be adopted with equal advantage. I must, however, state to you, that in America operations of this nature have been performed, for Dr. Barton, of Philadelphia, has in more than one instance cut through bones near joints which have been anchylosed in a bad position; and, in one instance, that of a sailor, where anchylosis of the hip had taken place, and had rendered the limb useless, the femur was cut through with a favourable result.—*Med. Times and Gazette, Jan.* 15, 1853, *p.* 53.

51.—ON THE DIFFERENT FORMS OF INFLAMMATION IN JOINTS.

By Dr. F. Fuehrer.

In every form of inflammation occurring in a joint, it is found that all the structures appertaining thereto are more or less affected. It follows, therefore, that we must determine, in every case, the peculiar character of the inflammation, and ascertain by the symptoms the order in which the different structures become involved. For example, that inflammation which commences in the capsule of the joint, accompanied by exudation from the synovial membrane, throughout of destructive character, is different from that which begins in the bones, filling the spongy texture with exudation, breaking through the cartilages, and then exciting acute inflammation and disorganisation of the serous cavity. If we take the three structures of joints which most readily offer themselves to notice, namely, the synovial membrane, the cartilaginous covering, and the articular extremity of the

bones, we find the basis for an anatomical classification of the different forms of inflammation. As primary affections of the capsule and articular cartilages may be enumerated: traumatic inflammation; rheumatic, gouty, and fungous inflammation; acute empyema. As affections originating in the bones: arthritic and tuberculous inflammation. In the acute form of rheumatic inflammation there is rapid formation of pus, plastic exudation upon a red and injected synovial membrane, softening of the capsule, with rupture, and infiltration of pus among the muscles under the fasciæ. In the chronic form the important character consists in its being connected with necrosis of the bones. Fistulous communications opening externally exist. When the joint is opened there is found a discoloured greyish, or bloody pus, the inner surface of the capsule being of blackish-green hue, and covered with exudation. The ligaments are destroyed, and the bones are discoloured, eroded, and often broken. There is pulpy thickening of the fibrous capsule, and infiltration of the neighbouring parts. The periosteum is thickened, and more firmly adherent than natural. In spite of the disorganisation, the articular cartilages often adhere with great firmness to the surface of the bones. *Arthritic inflammation* is characterised by exudation into the spongy substance of the bones, loosening of their texture, and mollities. In the second stage there are infiltration of fat and abnormal ossifications. In the third stage there are atrophy and alteration in the form of the bones. In the acute form the spongy substance is swollen, and full of blood; the medullary cavity is filled with a jelly-like exudation; the walls of the bone are thinned, so as to be readily cut with a knife. The cartilage is thinned and easily peeled off; the synovial membrane is white, shining, and thickened, and seems as if the secreting property were lost; the cavity of the joint is filled with a thin brownish-red ichorous fluid, which not uncommonly flows externally through fistulous passages. The chronic form, *arthritis chronica sicca*, is much more common. There is loosening of the tissues at the extremity of the bones, infiltration of the spongy substance with an oily fluid, and subsequently a deposition of yellow fat; the cartilage is occasionally hypertrophied; in other cases it becomes thinner and sieve-like; the bones may be completely denuded, except when a false membrane remedies the deficiency; there is no effusion into the cavity of the joint; pendulous masses of fat project from the serous membrane; depositions of bone are found in the neighbouring structures, tendons, ligaments, &c.; the periosteum takes on similar action, which leads to the development of osteophytes. The peculiar substances called corpuscula mobilia are formed from fibrous thickening of the synovial membrane, ossification, and subsequent separation from fracture or division of the pedicle. *Malum coxæ senile* is a stage of the preceding disease. There is erosion of the articular cavity, the bones are denuded of cartilage, and the surface often of ivory hardness; the synovial membrane is dry, so that in forcible flexion there is sometimes a crackling sound. The head of the femur may become so small, and the acetabulum so shallow, that subluxation may ensue; corpuscula mobilia are found in the joint, and the tendency to ossification extends to the surrounding muscles.

In *gouty inflammation* there is most probably an acute and chronic form; the usual gouty depositions of earthy matter are observed, but the tissues do not seem to undergo the same amount of disorganization as in the preceding.

Fungous inflammation occurs chiefly in the knee, the hand, and the foot, and pursues a chronic, painless course. The synovial membrane and the articular cartilage are thickly studded with greyish-red soft granulations, which make their way externally, and lead to the formation of fistulous passages. The surrounding structures are infiltrated. The granulations form, in cases of recovery, a false membrane, which covers the ends of the bones as cartilage.

In *tuberculous inflammation*, the cartilage adheres a long time, but is thinned and perforated, and the perforations lead through fistulous passages into abscesses of the bone. Pus makes its way into the joint, which then loses its cartilage.

Acute empyema of a joint occurs in puerperal diseases, in the desquamation period of scarlet fever, after typhus.—*Virchow's Archiv. für pathologische Anatomie und Physiologie, Fünfter Bandes Erstes Heft.—Med. Times and Gazette, Jan.* 15, 1853, *p.* 66.

ORGANS OF CIRCULATION.

52.—ON THE TREATMENT OF ANEURISM.

From a Review of the Surgical Works of Professors Miller and Fergusson, in the 'British and Foreign Medico-Chirurgical Review,' for January, 1853. By R. C. Williams, Esq.

[From so important an authority in surgery as Professor Fergusson, the following remarks upon the treatment of aneurism by compression, will be no doubt read with great interest. He says:]

"So far as our comparatively limited experience in the method by pressure, as followed by the Dublin surgeons, will enable us to form an estimate of its value, it seems in many respects, if not in all, preferable to that by deligation of the main artery; and there seem these great advantages in it, that if it does not act satisfactorily, the Hunterian operation may still be resorted to with as much probability of success as ever, while by its application none of those formidable dangers are incurred which are the well-known consequences of the application of the ligature. The difficulties and immediate dangers of a cutting operation are avoided. It may seem strange to make use of such language in the present day, as applicable to ligature of the superficial femoral artery—for that, I assume, to be the vessel meant by the unfortunately vague term of 'femoral;' nevertheless, when it is known that great difficulties have been experienced in such a proceeding, even by hospital surgeons and teachers of surgery, and that the accompanying great vein has been wounded by different operators, the facts cannot be overlooked. Mr. Syme states in the 'Edinburgh Monthly Journal of Medical Science,' for November, 1851, that he has tied the superficial femoral artery twenty times without a fatal issue, and with perfect success, and both he and his patients may be congratulated on such satisfactory results; but the tables above referred to show no such average success: and when it is borne in mind that the attempt to cure by pressure does not preclude the resource of the ligature, it seems to me that, with the ample evidence before us of the great success which has attended the modern practice by this means, the surgeon should undoubtedly give it a trial ere he resorts to the knife. Unquestionably the evil result of the Hunterian operation, in regard to ligature of the superficial femoral artery, has in many instances resulted from the defective or injurious style of operation, but the same may be said of certain examples where pressure has failed. Granting both of these statements to be correct, it cannot be overlooked that ligature of the superficial femoral artery, done to the perfection of human skill, has nevertheless been followed by the worst possible results. I have seen Mr. Syme perform the operation repeatedly with admirable skill and precision in all points, and the results have been all that could have been desired; but I have seen many others, and among them I may name the late Mr. Liston, perform the same operation with an equal amount of tact and judgment, yet the results have been very different. With pressure, surgery has still further resources, but with the ligature the fate of the case is, for a time, placed almost, if not quite, beyond human power; and doubtless the surgeons of Dublin who have resorted to this practice (many of whom stand amongst the highest of those who have graced the annals of the profession) have duly considered all these points.

For either the popliteal or femoral aneurism, the pressure may be made on the common femoral artery, or on the superficial. Sometimes one point may be chosen, sometimes another, and not unfrequently in one case both may be tried alternately.

The principal feature in all the instruments which have been used for such practice is, that, while effectual pressure may be kept up on the main artery, the collateral branches throughout the greater part of the limb have free action, and the part below is sufficiently supplied with blood. Instruments similar to those which were used in the last century have been revived, and some modern improvements have also been called into play. I have seen the tourniquet of Signoroni used with admirable effect; and two of the successful cases in the tables given by Dr. Bellingham were treated under my observation by my friend and former pupil, Mr. Robert Storks, with this instrument alone. But it is difficult to keep the pad steady on one point, and an instrument which fairly encircles the limb, without, however, compressing all the surface, is to be preferred. . . . . An ingenious addition to the common screw force has been applied here by means of bands of caoutchouc,

whereby a certain resiliency is acquired, which, while it keeps up effectual pressure, may possibly obviate injurious effects from the screw. . . . . Whatever instrument is used, it is of importance to bear in mind that the absolute stoppage of the circulation is not essential, as it has been proved by experience that a diminished force of circulation is sufficient to effect the desired end. If, however, it is found that pressure strong enough to arrest the flow of blood in the main vessel can be applied, then, doubtless, the favourable effects may be expected more speedily."

Mr. Miller's observations on the same subject well deserve to be quoted along with those of Mr. Fergusson, and, like them, supply an excellent example of sound and candid surgical reasoning.

"*The Popliteal* is probably the most common of all external aneurisms; and, hitherto, the Hunterian application of ligature to the superficial femoral has been the only approved mode of treatment. Latterly, however, as elsewhere explained, the application of pressure, instead of the ligature, has been employed. And experience is, almost daily, giving direct and undoubted testimony to the efficacy of the practice. There are some patients, doubtless, who may prove intolerant of pressure; and there may be others who prefer the apparent certainty of the knife and ligature to the apparent uncertainty and delay of the compressor. But the greater number of cases are assuredly capable of cure by pressure properly applied; without risk, with but little pain or inconvenience, and without any wearisome amount of privation or confinement. The skin, which is to bear the pressure of the instrument, is protected by a layer of thick soap-plaster; and that again, may be covered by leather. More than one compressor is used; or, at least, pressure is made at different parts, at different times; so that the burden of it may not all be thrown on one point, but, by being subdivided, may be rendered more tolerable. Using several instruments, along the course of the vessel in the thigh—they may be slackened and tightened alternately; or the same instrument may be shifted in its site, with a like effect. It is never to be forgotten, that all severity of pressure is unnecessary; and that it is not essential to arrest the arterial flow at the compressed point. And it is also important to remember, that should this mode of treatment fail, it by no means interferes with the subsequent performance of the ordinary operation; but, on the contrary, the constitutional treatment suitable for pressure renders the success of subsequent deligation all the more probable. Those surgeons who obstinately adhere to the old operation may adduce, as their apology, a series of successful cases so treated. But this is very plainly a contracted view of the subject; and as well might such practitioners prefer successful amputation of the hand to amputation of a finger, for a simple affection of the latter only. A surgeon of the olden time, who had succeeded in curing several successive cases of popliteal aneurism by amputation of the thigh, might very naturally entertain a distrust and dislike of the proposal to treat the same disease by ligature of the femoral; but the naturalness of such an aversion to the minor and modern practice, would not render it one whit the more reasonable or praiseworthy. And an impartial observer will not consider any one justified, in subjecting his patient to serious risk of life, by hemorrhage, suppuration, and gangrene, while he has it in his power to effect a cure by minor means, comparatively devoid of risk, and the failure of which will not militate against subsequent recourse to the major procedure—if necessary. Why should a mode of treatment, which causes little or no risk, always be passed by? or why should an operation always be had recourse to, which may, and not unfrequently does, result in direct loss of life? And the question comes in much force, if it be admitted—and statistics will scarcely warrant even feeble contradiction of this any longer—that the two methods are at least equally successful for the cure of aneurism.

Recorded facts seem to prove the following conclusions:—1. That in popliteal aneurism, skilful compression of the femoral is capable of curing the disease, and that with comparative, and almost absolute safety to life and limb; 2. That the time expended in cure is, on an average, not greater than in the treatment by ligature; 3. That failure by compression does not compromise subsequent recourse to deligation; 4. And that consequently, compression, when skilfully employed, being equally certain, far more safe, and not more tedious than the ligature, should, in the great majority of cases, be preferred. The only disadvantage of compression is

the care and trouble necessary on the part of the attendant, with irksomeness and sometimes suffering on the part of the patient. The obvious and only advantage of deligation, on the other hand, is the facility and dispatch of its execution, with probable exemption from suffering afterwards by the patient, in the successful cases. The formidable disadvantage is, its proved risk to life and limb."—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 78.

53.—CASE OF ANEURISM BY COMPRESSION.

Under the care of EDWARD COCK, Esq.

[From a very important case of popliteal aneurism treated by compression, the following points would appear to have been established:]

1. That the main trunk, supplying an aneurism sac, may be steadily compressed for more than three months without the obliteration of the vessel being obtained.

2. That the aperture establishing a communication between the still patent artery and the sac (the latter being partially filled up by fibrinous layers) may, during the same period, remain open, in spite of compression exerted on the arterial trunk and sac.

3. That the current of blood so admitted has sufficient force to make the aneurismal tumour pulsate continuously.

4. That the sac, notwithstanding the impulse communicated to it by the artery, goes on diminishing in size, and becoming harder.

5. That all pain and uneasiness connected with the aneurismal tumour may cease, although the pulsation do continue.

6. That the tendency for a twelvemonth is rather towards the decrease than the increase of the tumour.

7. That great disturbance of the sac and vessel, producing inflammation and congestion, may so change the relation of parts, and so far favour fibrinous deposits and general adhesions, as to require compression on the main trunk but a short time for the complete obliteration of the latter, and the consolidation of the sac.

[In a second case, however, of the same disease, the features offered a striking contrast. The patient was a carpenter, 57 years of age, tall and robust, and had always been of temperate habits. Three months before admission his leg and thigh had pained him for a few days, and a month afterwards he found a small lump, the size of a plum, in the popliteal space. During the next two months the tumour had got gradually larger, so as to seriously impede walking.]

On admission, the patient's state was the following:—There is a strongly pulsating tumour, partly in the right popliteal space, and partly lower down towards the gastrocnemius muscle. The swelling begins above, in the popliteal space, opposite to the upper border of the patella, and ends below, on a level with the tubercle of the tibia. The tumour is round, and about the size of a turkey's egg; it pulsates strongly, and presents, on auscultation, a strong bruit. The chest, on careful exploration, does not yield any evidence of thoracic aneurism. The tumour feels yielding and elastic, and the hand placed upon it receives a sensation as if the vessel were dilated more towards the inner than the outer side.

Mr. Cock, after considering all the symptoms of the case, and giving due regard to the constitution, health, temper, &c., of the patient, resolved to give compression a fair trial, and used a clamp lately modified by Mr. Bigg, to which the latter has given the name of "Bigg's Aneurismal Compressor." The instrument may be described as follows:—

A semicircle of steel, with anterior and posterior moveable arms, the anterior containing the screw and pad to rest on the artery, the posterior holding the hinged cushion or splint, on which the limb is placed. When the instrument is applied, the pad is screwed down so as to *gently* compress the artery. The centre screw is then turned to direct the pad inwards, and fix the artery between it and the bone. The lower screw placed beneath the cushion raises the outer edge of the splint, and prevents the instrument moving in the slightest degree. The advantage of this instrument seemed to us to consist principally in giving the pad a direction inwards towards the bone, and in completely securing the limb by a good

broad splint, which may, by a screw placed beneath it, be brought in closer contact with the thigh.

Mr. Cock expressed himself greatly pleased with the manner in which this clamp acted all through the case.

The compression was begun Nov. 24th, and regularly continued to Dec. the 10th, making just sixteen days. The pulsations ceased five days before the apparatus was completely let off; but it was thought advisable to continue the pressure, so as to ensure the due establishment of the collateral circulation. The tumour was on the day of the patient's discharge (Dec. 22, 1852, thirty-seven days after admission) just half its original bulk, and presenting a great degree of hardness. The pressure was kept up with great regularity and patience during the whole of the above-mentioned period; the weight at the groin being substituted for the clamp when the latter was getting too irksome. The patient slept very little for a whole week, as he was anxious to keep up the pressure in the most exact manner; and he was fully rewarded for his close adherence to Mr. Cock's directions, by the speedy solidification of the sac and obliteration of the artery.

When the apparatus had been completely removed, the leg was tightly and evenly secured by a roller; and when the patient first attempted to walk he felt the leg rather weak, but all pain in the limb had quite disappeared. He finally left the hospital Dec. 22, 1852, with the tumour quite solid, and the complete obliteration of the artery.

This is certainly a most satisfactory result of compression in the treatment of aneurism, and likely to make a lasting impression on all those surgeons who saw the case.

The operations of tying the main artery and compressing it for the cure of aneurism are, in fact, identically the same in principle. Some surgeons, like Mr. Syme, prefer the old method. We must say, however, that the compression, as used in Dublin and in London, seems equally successful, if not more so. It may be sometimes more tedious, but certainly more safe. In both operations the current of blood into the sac is not prevented entirely. The ligature may stop the current in the main artery, but not in the collateral circulation. Therefore in both cases the blood, in fact, is only *impeded* in the tumour—the previous momentum is checked, and the blood passing thus slowly, lines the part with fibrinous deposits; but if it be suddenly checked in the main artery by a ligature, the sac rapidly becomes solidified by coagulum. Eventually, however, both processes are more or less identical.—*Lancet, Jan.* 8, 1853, *p.* 31.

54.—POPLITEAL ANEURISM CURED BY COMPRESSION OF THE FEMORAL ARTERY AT ITS UPPER THIRD.

By Dr. J. Munro, Coldstream Guards.

[The following case deserves every attention, because a slighter degree of pressure than that ordinarily employed, proved sufficient for its cure. The patient was aged twenty-three, of a delicate and spare habit. The accident appeared to have arisen from an effort in playing at cricket. He was under the impression of having received a sprain. A large tumour occupied the popliteal space, and presented all the symptoms of aneurism.]

After a little preparatory treatment, Mr. Phillips's instrument was applied, at first over the brim of the pelvis. The pressure could be borne only an hour and a half; it caused severe pain and feverishness. Believing that this arose in great measure from nervousness, the author employed manual pressure a little below the origin of the profunda. This was effected by the aid of several intelligent convalescents. The artery was compressed only to such a degree as to allow a feeble pulsation of the sac. For the first three days this plan was followed for eight hours only during the day. The patient did not complain at all. There was no feverishness, nor increased œdema of the leg. The clamp tourniquet was now employed, but was removed each night; finding that it was well borne, it was kept on at night also from the 26th. On the 3rd of May the sac had become harder and smaller, the articular arteries more developed, and the œdema of the

calf less. On the 6th the sac ceased to pulsate, and the tourniquet was removed. From this date the absorption of the contents of the sac went on rapidly, and he began to regain the use of his limb. In a short time the measurement round the limb diminished from sixteen inches and a quarter to fourteen inches and one-third; the femoral artery was pervious. On the 2nd of July he was dismissed to his duty, which he continued to do well till the beginning of November. Before that time his general health seemed worse. On the 19th of November he was again admitted, and an aneurism of the aorta was found near the cœliac axis. He complained of great pain in the loins and abdomen, coldness and numbness of the legs, faintness and nausea. On the 9th of Dec. he seemed to be fast sinking, and died on the following day.

On post-mortem examination, the heart was found of usual size—somewhat flabby on the right side, but the texture healthy; valves healthy; no disease of lining membrane; the aorta sound to the situation of the cœliac axis, between which and the superior mesenteric a rupture of its coats was found, and openings communicating with a large sac, of recent formation and filled with coagula. It had burst in two places, and several pounds of blood were found in the cavity of the abdomen. The aneurismal limb was injected; the femoral and popliteal arteries were of natural size and pervious, until opposite the centre of the popliteal space; femoral vein pervious and healthy; the profunda and its branches enlarged; slight thickening, all that remained of the sac; popliteal artery obliterated down to its division into the tibial arteries; popliteal vein also obliterated; the anterior tibial artery enlarged; the posterior of usual size; the peronæal larger than usual; muscular branches large; the ramus anastomoticus magnus three times its usual size, its branches anastomosing with the inferior articular recurrent tibial, and with each other. Two superior articular and an azygos, given off by a common trunk, just previous to the remains of the sac, anastomosed freely with the recurrent tibial and peronæal.

The recurrent tibial was as large as the radial, and anastomosed freely with the articulars and plexus in the peronæal nerve; a tortuous plexus in the substance of the popliteal and peronæal nerves, united below with a recurrent branch from the anterior and posterior tibial behind the head of the fibula; another branch from the azygos communicated with the recurrent branches behind the head of the fibula.

The communication between the external and internal articular was effected by branches three times their natural size; that between the anastomotica magna and inferior articular, between the recurrent tibial and superior articular, by large branches.

[This case having been read before the Medical and Chirurgical Society of London, Mr. Hodgson said he concurred in the opinion that the treatment of aneurism by compression had not attracted that attention which its importance deserved, and which it had obtained in Ireland. He remarked that:]

In Dr. Munro's case, which he had examined, the aneurism and the artery in the ham were obliterated; but above, where the pressure was applied, the artery was pervious and quite in its healthy condition. It was clear, therefore, from these facts, that the cure was not effected, at least in these instances, by producing adhesion between its sides and obliteration of the artery at the point where the pressure was applied. By what process, then, did compression cause the cure of the disease as effectually as the ligature of the vessel at a distance from the aneurism? From the recorded cases, especially from that communicated by Dr. Munro, it was evident that moderate, but not "obstructive pressure," was that which was required. How did this act upon the artery? In addition to the three proper coats, which formerly were regarded as constituting an artery, modern histologists have demonstrated another texture, composing the inner portion of the middle or elastic coat, and of course, situated between this elastic and the inner coats. In this texture resides the vital contractility of the vessel. Now, it appears that when an artery is subjected to any irritation, this vital contractility is brought into action. When an artery is torn, or violently stretched and elongated, or exposed to a chemical irritant, it is by the agency of this vital contractility that its calibre is diminished; and in extreme cases this sometimes happens to such an extent that its area even becomes completely closed. Compression is one of the agents by which this power may be brought into action, and he believed that it was in this manner that

long-continued moderate pressure produced such a diminution in the volume of the stream passing through the main artery to the disease, if not the entire suppression of the current, as to cause those changes to take place in the aneurismal sac, by which the cure of aneurism is effected, when a ligature is applied at a distance from the tumour. In his opinion, it was very important to keep this principle in view in adopting the means of treatment by compression; because, by a moderate degree of long-continued pressure, we should produce all the good effects required, whilst great pressure would produce great suffering, which could be borne, if at all, with extreme difficulty, and often with most injurious effects upon the parts to which it is applied. Ample experience had now proved that long-continued moderate pressure was all that was required to bring about the cure of the disease, and not such a degree of violent pressure as would mechanically prevent the flow of blood through the vessel. The latter idea had, he believed, caused the failure of this practice in many instances in which it had been employed, whilst in others, by causing sloughing, and inflammation, and obstruction in the great venous trunks, and serious engorgement of the limb, its continuance was from necessity abandoned. Many years ago he had been engaged in some experiments on animals, in which attempts were made to procure the obliteration of arteries by powerful local pressure. In very few instances could this be accomplished; the sufferings which it produced were excessive, and generally it caused inflammation of the veins, and most injurious effects upon the surrounding parts.

[Mr. Fergusson thought more depended upon the pressure itself than on the influence of the contractile coat. He said:]

Pressure would obstruct the current of blood about one third, more or less; yet the pulsation would continue; that amount of pressure quieted the circulation, and to this more than to anything else he attributed the cure. In calling to mind some points in Dr. Munro's case, he recollected that the calibre of the artery, from the upper part of the superficial femoral to the popliteal, was fully as great as in health. This was a fact in favour of the cure being effected by pressure only. Another proof was the circumstance that all the compression necessary was that which would impede, but not completely obstruct, the circulation. The same thing might take place in respect to a ligature, and it was only due to Mr. Wardrop to say that he had been the first to show that it was not necessary to entirely obstruct the circulation through the aneurism, but only to diminish it to such an extent as would give rise to the deposition of fibrine.—*Lancet, Jan.* 28, 1853, p. 117.

55.—ON THE OBLITERATION OF VARICOSE VEINS, AND THE SOURCES OF DANGER INVOLVED IN THAT OPERATION.

By Henry Lee, Esq.

[Mr. Lee operates in these cases in the following manner:—He first introduces a needle under the trunk of the vein to be obliterated, and leaves it there for a few days; and 2dly, at the expiration of that time, when the blood on either side of the needle has become coagulated, he completes the operation by dividing the vein by a subcutaneous incision. Mr. Lee then goes on to explain his reasons for thus dividing his operation into two parts; and then considers the effects produced upon the system by the decomposed contents of a vein being received into the circulation, and which subject he considers is still very obscurely understood.]

When a needle is placed under a vein, and a twisted suture applied around its extremities, the vein is in much the same condition as if a ligature were applied to it; and we may judge of the process that takes place in the human subject by that which happens when a ligature is applied to a vein in an animal. When this is done in a horse, the first effect is the stagnation of the blood on each side of the obstruction. The stagnant blood generally coagulates, if the ligature be allowed to remain, during the first twenty-four hours. We have then the vein compressed at one point, and a clot of blood between the ligature and the next communicating branch on each side. But the coagulum is apt to extend much further upon the distal side than upon the side next the heart, because the vessels which supply the tied vein, not being able to empty themselves, are liable also to become distended with coagulated blood. For this reason, it sometimes happens that a long coagu-

lum is formed in the distal portion of the vein, filling it to distension, while the portion next the heart is perfectly empty and collapsed.

A ligature upon a vein does not divide its internal coat, either in man or animals, as happens when an artery is tied. At most some superficial abrasion is produced of the internal tunic. The coats of a vein are by a ligature drawn into longitudinal folds, and a visible line of indentation is produced. The coagulum of blood formed within the vessel moulds itself completely to the shape of the vessel in which it is contained, and bears the marks of the longitudinal folds of the lining membrane, and of its semilunar valves. This inherent power of the blood accurately to adapt itself to every inequality, and completely to close the vessel, is a very remarkable quality. It is one of the living processes accomplished by the blood which we can trace, and by which we are prepared to understand other more subtle operations in the animal economy which are more hidden from our observation.

The first effect of the formation of such a coagulum is to prevent any hemorrhage, in case the vessel should be subsequently divided by ulceration or by other means. It also serves the very important office of preventing any fluids from passing along the canal of the vessel, which might prove prejudicial to the system. But a coagulum of this sort is not to be regarded in its mechanical relations alone. It is not a simple plug of foreign matter; it is still a part of the living being, and capable of undergoing many and most important living changes. Some of these are engendered within the confined blood itself, while others are common to it and the surrounding parts. It has, I am aware, been the custom to consider coagulated blood as no longer a part of the living being. Some physiologists have regarded the coagulation of the blood as the act of death; others have looked upon it as the last act of life. Both these ideas have evidently arisen from the action having constantly been observed out of the body, where undoubtedly the separated portion of blood does die. But when we consider, that the conversion of blood into muscle, in the ordinary process of nutrition, is but a modified act of coagulation, it will readily be admitted that the coagulation of a portion of blood by no means necessarily involves its death. In the experiments which Hunter performed of transplanting one portion of an animal (as a tooth or a testicle, for example) into another living being, he had a much higher object in view than the gratification of his curiosity. Although he, doubtless, was interested and amused to see the tooth of a man growing from the comb of a cock, yet he saw more than this. He saw in it the great principle, that every part of an organised structure is endowed with its own life, and, although incapable of continued separate and independent existence, he inferred that each separate part might live for a certain time; that in the case of the tooth, for instance, it would retain its vitality when separated from the rest of the body, until it had formed fresh connexions in its new situation. Now, those principles (extending as they do to every part of the animal system, you will at once perceive, are applicable to our present subject. The blood alone forms no exception to the general rule. It may for a time retain its vitality, whether in a solid or a fluid form, when separated from the circulating mass. But as it may live and undergo further changes, in harmony with the well-being of the part and of the system, so may it die, or become subject to certain morbid actions, and thus be a source of danger to both. We have here, then, two distinct classes of cases; one, in which the separated blood undergoes changes which issue in the reparation of the injury inflicted upon the vein; the other, in which, from some defect in the system, or from some voice in the composition of the blood, the natural and healthy process of repair is not carried out. It will be my endeavour, if time permit, to trace very briefly both these actions (the healthy and the unhealthy) through some of their more ordinary forms. After a portion of the blood has become separated and coagulated, it adheres to the surfaces with which it happens at the time to be in contact. The adhesion thus formed is at first very slight, but it gradually becomes much firmer. The coagulum itself is sometimes solid throughout; at other times it is less consistent and broken; but it always fills the cylinder of the vein. After a ligature has been applied to the jugular vein of a horse for the first five days there is no blush upon its lining membrane. No signs of adhesive inflammation,—that is, of lymph secreted from inflamed vessels,—can in any part be observed in the interior of the vein. Up to this period, there is no thickening of the proper coats of the vein,

and no agglutination of the contiguous folds of membrane. The situation of the ligature is simply marked by a dense white line. But the cellular structure around is thickened by the deposit of lymph. If two ligatures be applied, and the vein divided between them, the cut edges will recede for about an inch; but the process which goes on in the interior of the vein will not materially vary from that above described. At the expiration of a week, a layer of lymph is effused around the ligature, enfolding it in a kind of sheath. After this, ulceration of the coats of the vein commences, and, if the ligature be allowed to remain, continues till the coats of the vein are completely divided. The ulcerated edges, at this time, adhere firmly to the surrounding cellular sheath, which is thickened by a deposit of lymph. The calibre of the vein at this time has not undergone any diminution or contraction; so that it may happen, that after a ligature has traversed a vein, and the coagulum which it contained has been dissolved or absorbed, the circulation through it may be completely re-established, the ulcerated sides of the vein being represented by the condensed and thickened cellular sheath.

You will now perceive one object which I had in view in dividing the vein by a subcutaneous incision in the patient who has just left, instead of allowing the needles to ulcerate their way out. By such an operation the vein is allowed at once to retract. A pad being then applied, the surrounding areolar tissue is made to occupy the place of the vein, and, uniting there by adhesive inflammation, it prevents the venous channel from becoming re-established.

During the time that the changes which I have attempted to describe are going on in the coats of the vein, other important actions may be going on in its contents. It is necessary, however, to remark, that these changes occur more readily in smaller than in larger animals, and the time required for the coats of the vein to become ulcerated through, is less in the human subject than in the horse, where we have the best opportunities of observing the different stages of this process.

When the blood has become stagnant in an obstructed vein, if its coagulating power be unimpaired, it will occasionally happen that the whole of the blood will form a solid mass. This will adhere to the sides of the vein, and completely obstruct its canal.

At other times, the outer layer of blood alone will form itself into a kind of membrane, which will adhere and become incorporated with the sides of the vein. It will occasionally happen, under these circumstances, that the blood in the centre will remain fluid, or will be very loosely coagulated. The less consistent portions may then be removed, and carried in the course of the circulation, leaving a cylinder of fibrine coating the vein, through which the circulation of the part may be re-established. Now, all these actions may and do go on without any signs of inflammation, and without any constitutional disturbance. The changes are produced in the fibrine of the blood, which forms a bond of union between the opposed sides of the vein, and obliterates its canal. This obliteration may be temporary or permanent; but, in either case, the material used is derived from the blood itself, and is not the product of inflammation. Thus the canal of a vein may be obstructed by a coagulum; that coagulum may become partially organised or absorbed, or its constituents may be dissolved and carried in the course of the circulation, without any preternatural excitement in the part, or in the system at large. The whole process is conducted without any sign of inflammation, properly so called, and without any unnatural appearance of vascularity of the lining membrane of the vein.

Provided the blood be in a healthy condition, and unmixed with any morbid secretion, the veins consequently may be cut, bruised, or lacerated without any evil consequences. Healthy reparation is produced first by the temporary obstruction of the veins, and then by the removal of that obstruction in one of the ways above mentioned.

But it will sometimes happen, through some morbid condition of the blood itself, or in consequence of the introduction of some vitiated secretions into it, that an unhealthy action is set up. Any morbid matter, generated or introduced into the cavity of a vein, has no means of escaping through its dense parietes, and the inflammation and irritation which may then be set up is as great as any that can be produced in any part of the living body. Let me illustrate this in reference to the case upon which I have just operated. Let us suppose that, instead of a healthy

coagulum of blood, the contents of the vein had become mixed with some purulent secretion of the part, or that a portion of the fibrine confined within the vein had undergone some degree of decomposition, the healthy and natural actions of the parts would then immediately be disturbed, the skin would become red, the cellular tissue distended, and the whole track of the vein extremely painful. At the same time there would be great constitutional irritation, the pulse and respiration would become excited, and there would be other symptoms of fever, the character of which would vary according to the local changes which took place in the obstructed vein.

The first question which we naturally ask under such circumstances is, supposing there to be some unnatural fluid in the vein, how is that to be got rid of? If there be an external opening in the vein, it may escape in that way; and this is what happens when a wound made in bleeding opens again, and allows the grumous dark-coloured contents of the vein to escape. But it often happens that morbid matter may be retained in a vein where there is no external opening by which it can escape. It is natural to suppose that, under such circumstances, it would find its way along the channel of the vein into the general circulation; and this, in reality, occasionally happens, and doubtless affords an explanation of the sudden, severe, and even fatal symptoms which have sometimes followed an apparently trifling operation on a vein. It is for the purpose of avoiding any such accident that I have adopted the plan of operating which I have described. I have thereby the means of ascertaining, before any opening is made in the vein, whether the blood has its natural power of coagulating, and whether the channel of the vessel is closed. If this be the case a portion of fibrine may decompose in a vein, or purulent secretions may be introduced into it, and only a local irritation will be produced, unattended with any serious symptoms. But should the canal of the vein not be closed, and these same morbid products find their way through it into the general circulation, the most alarming symptoms will result. Some fifty or sixty years ago, when the operation of tying varicose veins, without any previous preparation, was in vogue, it occurred to Sir E. Home to have a private patient on whom he performed the operation of tying the saphena vein. Symptoms of typhoid fever set in, and terminated fatally in two or three days. About the same time, two other cases occurred, in St. George's Hospital, where, after the operation of tying the saphena vein, similar symptoms manifested themselves, and the patients narrowly escaped with their lives.

Sir B. Brodie, upon whose authority these cases are given, not being satisfied with an operation which was occasionally followed by such consequences, suggested a modification of it. He introduced a very thin knife under the skin, and divided the vein by subcutaneous section. This operation, for a time, appeared to answer; but a case at length happened in which the patient died four days after the operation. After this, so great was the fear of wounding the saphena vein, that no surgeon in London ventured to perform the operation for several years. Indeed, up to the present time, something like a superstitious dread is entertained generally respecting the ligature of veins, without, however, any distinct ideas having been given as to the real source of danger in such cases.

In pursuing some investigations relative to this subject, I was induced to believe that the decomposed and putrid fibrine of the blood was the real cause of the very serious symptoms in these cases; but, being at a loss to know what the effects of putrid fibrine were upon the animal system, and having been able to obtain no information upon this subject from any published work that I was acquainted with, I determined to try what the result of the introduction of such a fluid into the vascular system would be. Accordingly, having obtained the assistance of a veterinary surgeon, and having obtained some fibrine in a very putrid condition, I caused an ounce of the decomposed fluid, mixed with an equal quantity of water, to be injected into the jugular vein of a donkey. The fluid passed without obstruction into the course of the circulation, and in a few moments the animal gave three or four groans expressive of great distress. The vital powers appeared to be suddenly prostrated; the animal lay unable to rise, and soon fell into a state of syncope. This lasted a few minutes. On getting up, the animal reeled and staggered about, but subsequently recovered sufficiently to walk to his stable. Some reaction now commenced; the breathing was disturbed, short, and quick; the pulse, which

naturally beats about 36 in the minute, rose to 120. These symptoms continued about an hour and a half. After this, the animal became very restless and uneasy, and evinced internal pain by groaning and looking at his side. The animal died four hours after the operation. On a *post-mortem* examination, the jugular vein, into which the decomposed fluid had been injected, was found in its natural condition, and partially distended with fluid blood. It was pervious throughout its whole length, and contained no coagula. The lungs were found studded with irregularly-circumscribed soft black patches. When cut into, these discharged a blackish fluid, having the appearance of a mixture of blood and ink, and of a strong putrid smell. The cœcum and colon, and a portion of the small intestines, were deeply congested, and of a dark livid colour.

In this instance, the decomposed fibrine evidently acted as a most virulent poison upon the system. In fact, there are few animal poisons known which would produce such serious effects in the same space of time. But it will be asked, if such serious effects follow the introduction of putrid fibrine into the circulating system, how is it that these results are not oftener manifested, seeing that the blood must constantly be liable to its influence? This must constantly happen in cases of sloughing wounds, and in cases of abscesses in the course of inflamed veins.

In healthy states of the constitution, the system is preserved by a very wonderful provision, and one which could not have been anticipated, I presume, by any process of reasoning. The blood has itself the power of fixing some morbid matters that come in contact with it, and, by entering into a kind of combination with the first particles that present themselves, it effectually seals the vessels against the entrance of any further portions. It is indeed generally conceived, that putrid fluids, mixing with the blood, prevent its coagulation; and this I believe to be generally true. But the effect of slightly decomposed fibrine upon the blood offers a marked and very peculiar exception to this rule. The blood in the living being is, as I have said, peculiarly liable to the influence of putrid fibrine; and it is in perfect accordance with the usual economy of nature to find the sensibilities of a part actively alive to those influences which are calculated to affect it injuriously. Now, the sensibilities of the blood for its self-preservation will be found, upon examination, to be as evident as those of other parts of the body, and to be called into operation in an especial manner with regard to the action of putrid fibrine.

The following experiments will show how readily the presence of such decomposed fibrine is felt by the living blood, and will also illustrate the means employed for the preservation of the system from its injurious and poisonous influence. Having obtained some fibrine, quite firm and free from any colouring matter, I allowed it to decompose till it became fluid. A small quantity of this was mixed with some recently drawn blood, and in less than two minutes the mixture had formed a uniform soft coagulum. This experiment was repeated upon some blood drawn from a healthy horse, with a similar result. Now, these experiments show that the action of putrid fibrine upon the blood is similar to that of pus. If pus be mixed with recently drawn blood, it will have the effect of coagulating it in about two minutes; but if injected into a vein, the coagulation will take place almost immediately. This is known by the thickened and cord-like feeling of the vein, and by the circulation through it being obstructed. It is evident that the effect of such an action must be to prevent the morbid matter from passing into the circulation. The putrid fibrine or the pus unites with the first portions of blood with which they come in contact. They form with it a coagulum, which adheres to the sides of the vessel in which it is contained, and effectually seals it against the entrance of any further portions of morbid matter. The irritating substance is thus fixed and localised to that portion of the vascular system where it is first formed; and, although it may produce a considerable amount of irritation and suppuration here, yet, if the coagula formed be sufficiently firm, the system will be preserved. A local inflammation alone will be produced, and the poisonous effects of the morbid matter will not be felt by the constitution. A practical illustration is here presented of a principle long and perseveringly advocated by Dr. Wilson, of St. George's Hospital, namely, that the coagulation of the blood out of the body is only a feeble expression of its much more energetic action in the living system. The one act of its changing its form when withdrawn from the body, is the last expression of that wonderful power, by which, while in the body, it is constantly

changing its form from the fluid to the solid, and from the solid to the fluid, in the various processes of growth, nutrition, and decay. It was the consideration of this power, as evinced in the preservation of the system from the effects of the circulation of purulent fluids, that led me to adopt the plan of ascertaining that the vein was obstructed before dividing it in the operation for varicose veins. As nature adopted this plan of preventing the absorption of vitiated fluids when formed, it appeared to me, that increased security would be given, if it were ascertained that a firm coagulum obstructed the vein before its coats were injured. This is effected by the simple expedient of keeping the blood at rest, for a certain time, in a vein; and by the mode now adopted, we have the great advantage of insuring that the coagulum is composed of blood alone, and not blood in combination with pus, or other vitiated fluid. This may be a point of considerable importance, for a time comes when portions of the coagulum are dissolved, and carried in the course of the circulation. If formed from healthy blood, this process is attended with no constitutional disturbance; but if the coagula have been partly composed of vitiated fluids, a train of symptoms may be induced which exercise most important influences upon the system.

If the quantity of vitiated fluid mixing with the blood be large, or if it be in an advanced stage of decomposition, the coagulum by which it is retained may be very loosely formed. The central portions will then become softened down, more or less deprived of their colouring matter, and converted into a fluid resembling pus. As the process of softening proceeds, the coagulum which first formed becomes gradually of less consistence, and at length the vitiated fluid contained in its centre escapes, and is poured into some of the adjacent veins. It here determines, under ordinary circumstances, one of the three following physical results.

First. The dissolved matter, which has often the appearance of pus, mixing with fresh portions of blood, may determine the formation of fresh coagula. These may retain the vitiated fluid, and, adhering at intervals to the sides of the vein, they may, for a time, prevent any of the morbid matter from reaching the general circulation. Within a short period, however, the centres of the newly-formed coagula will become softened and gradually deprived of their colouring matter. The process of softening will proceed from the centre towards the circumference of each portion, until the greater part, or the whole, is converted into a thick fluid, resembling pus. This fluid it is which has been so often mistaken for pus in the veins.

Secondly. The blood that has been infected, instead of coagulating, may separate into its different elements. The fibrine in this case separates from the rest, and, allowing the serum and colouring matter of the blood to pass on, may adhere to any part of the vascular system with which it comes in contact. The vessel in which the adherent fibrine is contained is not completely obstructed, as happens when the blood coagulates in a vein. The difference is this, that in one case the fibrine alone of the blood is detained, and in the other all the parts of the blood are contained in the clot. In the first case, the circulation can be still carried on between the fibrinous deposit and the opposite side of the vein; in the second, the calibre of the vessel is completely obstructed. An instance of this form of contaminated blood presented itself, a short time ago, in this hospital, in an old man who had a large tumour removed from the back part of the arm. A few days after the operation, he was attacked with erysipelas, which terminated in mortification of the part and death. In that case I had an opportunity of pointing out to those gentlemen who witnessed the post-mortem examination, that the axillary vein and its branches were about half filled with firm portions of decolourised fibrine, which had evidently formed before death, and by the side of which the circulation of the limb had for a time been maintained. In this instance the blood in the immediate neighbourhood of the wound was of a very black colour, and quite fluid.

Another remarkable instance of this form of diseased blood came under my care in the hospital, during Mr. Fergusson's absence, in Sept. last. A man, aged 37, was admitted, having six months previously fractured his patella; after which, although he was enabled to walk, he always experienced a sense of stiffness in the joint. On September 17th, he was attacked at two o'clock in the morning with a succession of rigors, which continued until the middle of that day. An abscess subsequently formed in the knee-joint, and the cellular tissue between the muscles of the leg and thigh were extensively infiltrated with pus. The shiverings were repeated on

several days after his admission into the hospital, and were followed by most profuse and exhausting perspirations. He died on the 16th of October. On a *post-mortem* examination the patella was found to be softened in its interior; one part of its posterior surface was rough and carious, and, lying in contact with this exposed surface, was a small detached portion of dead bone. The profunda vein was found to be filled with coagula, but the superficial femoral contained only a small quantity of fluid blood. At the junction of the two (and this is the point to which I wish particularly to direct your attention) was a considerable mass of white adherent fibrine. This was easily removed from the lining membrane of the vein, which then presented its natural polished appearance. No signs of inflammation of the lining membrane could be discovered. The portion of decolourised fibrine to which I have referred was removed from the vein, and, when pressed between the fingers, a small quantity of white purulent-looking matter escaped from its interior. At the lower part of the right lung were several small oval deposits of white matter, as firm in consistence as ordinary tubercle. In other parts of the same lobe were larger indurated masses, containing in their centres discoloured purulent-looking fluid. The point of the greatest interest in this case is, that, upon a microscopical examination, the appearances of the white fluid from the clot in the vein accurately resembled that from the secondary deposits in the lung. We therefore naturally come to the conclusion, that, in both these situations, the purulent-looking fluid was formed in the same way, and that the same action which produced its development in the fibrine, after it had travelled from the seat of injury to the termination of the profunda vein, produced its developments in the lung, at a still greater distance from the original source of mischief.

The third physical change that may take place in contaminated blood is, that it may decompose; instead of coagulating or of separating into its different elements it may become putrid in the vessels of the body. The whole of the constituents of the blood are then involved in the changes which take place. Fortunately, we have few examples of this disease in the London hospitals at present; but during the prevalence of severe epidemics they are not so very common. In the severer forms of puerperal fever especially, the whole mass of the blood appears to be contaminated, and whenever it stagnates, it shows a tendency to decompose. Any organ attacked in this state of the system will pass most rapidly into a state of gangrene. In a single day an organ may become attacked, its structure softened and broken down, and it will then present the characters of a putrid abscess.

Not long ago, I had the opportunity of examining a case of a woman who miscarried during the sixth month of her pregnancy. A few days afterwards, she was attacked with intense pain in the abdomen, and, two or three days later, with pain in the calf of the left leg. The pain in the leg was accompanied by swelling, which afterwards extended up the thigh. She died shortly after the attack. Upon examining the body after death, a small putrid abscess occupied the course of one of the branches of the hypogastric vein, at a short distance from the neck of the uterus; the iliac and femoral veins of the same side were filled with blood, in every stage of decomposition; the spermatic vein of the same side was stained of a dark purple colour, but its canal was pervious, and contained no coagula.

The remarks which I have now made have reference to contaminated blood generally, whenever the morbid matter is derived from purulent secretions or from putrid fibrine. The examples are now rare in which these forms of blood disease present themselves after injury to the superficial veins of the body; but formerly, when bleeding was more practised than it is at present, cases of the kind were not very uncommon. In the operation of obliterating varicose veins, no example of any severe disease has presented itself hitherto in this hospital, but, as fatal cases do occasionally occur, it is well to take every precaution. In the operation which I have recommended, all the usual sources of danger are, I believe, guarded against. We have the means of ascertaining, before the vein itself is injured, that its cavity is obliterated; and we may judge of the firmness of the coagula which it contains. Should the coagulum of blood not form in any case, after the introduction of the needles below the vein, in such an instance I certainly should decline to proceed with the operation. I should consider that, from some cause or other, the coagulating power of the blood was deficient, and that there was no security that any morbid matter which might accidentally be formed in the

part would not be conveyed along the channel of the vein into the general circulation.

It might at first appear an objection to this mode of operating, that it required a longer time than if the operation could be performed at once; but this is not the case. I have here the notes of a case which I recently treated in this way. A woman was admitted into this hospital on the 29th of September last, with a large cluster of veins on the inner side of the right leg, and one very large vein extending up the inner side of the thigh.

On the 2nd of October, a needle was introduced behind the cluster of veins in the leg, and also behind the enlarged vein in the thigh.

On the 5th, the needles were removed, and the veins divided by subcutaneous incision.

On the 9th, she was enabled to leave her bed; and on the 17th she left the hospital.—*Med. Times and Gazette, Jan.* 1, 1853, p. 5.

56.—MR STARTIN'S NEW METHOD OF APPLYING THE LIGATURE IN THE TREATMENT OF NÆVUS.

[The degree of success which has followed the adoption of Mr. Startin's novel and ingenious plan of treating nævus, safely warrants us in regarding it as a valuable addition to the resources of surgery.]

The method alluded to, which has already been described by its author in the pages of this journal, consists in the introduction of a subcutaneous ligature, composed of a single thread, around the base of the nævus, and then attaching its two ends, which are brought out at the same point, to a band of india-rubber, by which elastic traction is kept up until the thread cuts its way out. By this means the whole of the vascular structure is divided, and that by such a slow process that ample time is allowed for the vessels to become plugged up, and permanently obliterated. In principle, it will be seen that it is not very dissimilar to an operation sometimes adopted for fistulæ in ano, in which a wire ligature is introduced from above and gradually tightened.

In introducing the ligature, Mr. Startin proceeds in precisely the same way that is usually adopted when subcutaneous strangulation is intended,—every part of the growth must be surrounded, and none of the skin. This done, the ends of the ligature are tied pretty tightly, but not nearly so much so as to produce strangulation, and a knot having been made, the threads are attached to the elastic band. The latter is then stretched to a due degree of tension, so as to pull strongly on the ligature, and then securely fixed to some other part of the person by a bandage or long slip of plaster.

The length of time taken by the ligature in cutting its way through, varies of course according to the amount of traction put on it, and the size of the nævus: from a week to ten days being the average in Mr. Startin's practice. It always acts as a mild seton, and gives rise to some suppuration in its track.

The most important difference in result, between this and almost all other methods of treating nævi, is, that it *produces no destruction of the part whatever, and consequently leaves no cicatrix.* When the disease is situated on the face, forehead, neck, or scalp, this is an extremely valuable recommendation, and more especially so if it chance to, in any way, involve the lower eyelid, for should the contraction of a cicatrix be produced here, a troublesome and very disfiguring ectropium is almost sure to result. With regard to the upper eyelid, which is very frequently the seat of nævus, this fortunately does not hold good; the skin is lax, and very extensible, and eversion of the lid is not produced by any moderate amount of injury. We lately saw a cutaneous nævus, which involved almost all the whole of this lid, in an infant under the care of Mr. Wordsworth, at the Royal Ophthalmic Hospital. By strangulation in the ordinary way, performed at two operations, it was completely got rid of, no eversion followed, and a mere linear cicatrix was all that remained.

It must, however, be confessed that Mr. Startin's plan does not invariably avoid the production of a cicatrix, for in a few cases in which the disorganisation of the skin has been very great, and the whole structures much thickened, although its

vascularity is destroyed by the operation, there yet remaining a very visible deformity, the excision of the patch of now condensed cellular structure is necessitated. This may be done, however, without any risk of hemorrhage, and the scar left is very small. In the majority of instances, the patch, although at first much thickened, becomes, by a process of interstitial absorption, restored to an almost natural condition in the course of a few months.

We now come to speak of the kinds of nævus to which this treatment is not applicable. 1. When the disease is seated on parts which, from being pendulous and not firmly fixed, cannot bear the necessary traction, such as the ear, the lips, or the genital organs. 2. When the nævus is purely cutaneous: for if the morbid vascularity be derived from the skin itself, it is obvious that division of the subcutaneous tissues will not cure it. In the large class of cases in which the two forms occur together, there can be little doubt but that the skin is affected secondarily, and derives its supply of diseased vessels from below. We have searched in vain for any recorded anatomical observations which should prove this; but were it not so, no explanation could be afforded of the general success, as regards the skin, of the plan we are considering. There has even occurred more than one example in which a circumscribed port wine stain of the skin, attended by little or no evidence of subcutaneous disease, has been completely cured by the use of this form of ligature, making it probable that the disease is rarely confined to the skin. 3. In cases in which there is no reason for wishing to avoid a cicatrix, we can see no advantage likely to accrue from the new method in preference to strangulation by ligature, that would counterbalance the trouble and loss of time consequent on its adoption. The cure is more protracted and less complete.—*Med. Times and Gazette, Dec.* 11, 1852, *p.* 594.

57.—*Tincture of Mastic as a Hæmostatic.*—It is stated, in a recent number of *Schmidt's Jahrbucher*, that Dr. Frankl has found the tincture of mastic an excellent hæmostatic. He employs it in epistaxis, and in troublesome bleeding from leech bites It is applied to the points whence the blood issues, by means of a camel's hair pencil. Terzer, a dentist of Vienna, is also reported to have used it successfully in hæmorrhage following the extraction of teeth.—*Association Med. Journal, Jan.* 14, 1853, *p.* 43.

ORGANS OF RESPIRATION.

58.—TRACHEOTOMY, WITH A NEW METHOD OF PERFORMING THE OPERATION.

By Henry Thompson, Esq., M.B., M.R.C.S., Surgeon to the Blenheim Street Dispensary.

[The statement of Dr. Marshall Hall—that the operation of making an artificial opening into some part of the respiratory apparatus will soon be of no unfrequent occurrence—is considered by Mr. Thompson too decided to render it necessary for him to enter into discussion upon it. The object he has in view is to consider the present modes of carrying out the principle practically; and whether any means more advantageous might be found. He says,]

Three principal operations have been adopted for the purpose of opening the great air passage below the rima glottidis. Strangely enough, all these have been comprehended by systematic writers under the single term *bronchotomy*, although it is almost unnecessary to say, that the bronchus is never divided in any one of them. Regarded singly, they are known as *tracheotomy, laryngotomy*, and *laryngo-tracheotomy*. It is needless to describe these in detail.

Tracheotomy consists in laying bare the trachea at some point by dissection through the superjacent structures, and cutting through one or more of its rings, usually from about the third to the sixth. This method has been practised by surgeons from a very early period.

Laryngotomy is an incision into the membrane which intervenes between the thyroid and cricoid cartilages. Desault divided the former also, from below upwards, to a certain extent.

Laryngo-tracheotomy, commencing by an incision in the membranous space

described, divides the cricoid cartilage, and more or less of the trachea below. This was Boyer's method.

These operations have not been employed indifferently. Without quoting at length numerous authorities which have been consulted, it may be stated that it has been, in the main, a generally-received axiom among all surgeons, that when nothing more is indicated than the admission of air to the passages below the rima glottidis, laryngotomy is sufficient for the purpose, being also a much less difficult and serious proceeding than tracheotomy. But that when the removal of a foreign body is proposed, either tracheotomy, laryngo-tracheotomy, or the laryngotomy of Desault must be resorted to. Further, that when it is intended that a tube should be worn subsequently, for any considerable period of time, tracheotomy is to be employed, the larynx being too sensitive to admit of its long-continued presence. After laryngo-tracheotomy also, the tube has been found to give rise to much irritation.

Let us briefly compare these operations, in relation to the difficulties and dangers which are encountered in each.

The trachea above the sternum, by its anterior aspect, has the following structures in contact, or in close proximity with it:—

First, the isthmus of the thyroid body; the size and position of which varies somewhat, while it is also a little larger in the female than in the male. This is most commonly situated opposite to the third and fourth rings, reckoning from the top. On each side it enlarges, forming a lobe, which is closely applied to the side of the tube. A very large arterial supply is afforded to this body by numerous branches of the superior and inferior thyroid arteries, of which the latter are distributed chiefly to its under surface, where a free anastomosis exists between the vessels of either side. Rarely, there exists a third lobe, formed by a small projection of glandular substance from either side of the middle line, generally from the left. Lower down, some subcutaneous veins may be found of varying size; frequently a vessel, uniting the two anterior jugulars, crosses the region an inch or so above the sternum. Below the thyroid, the trachea is overlapped by the sterno-thyroid and sterno-hyoid muscles, and in the interval between these by the deep cervical fascia. On separating them, several veins, sometimes of large size (inferior thyroid), may be seen crossing the trachea to reach the innominate vein, which usually become more closely aggregated as they approach the sternum; here, also, are a few tracheal branches from the inferior thyroid artery; and on each side at this part the two carotid arteries are closely applied to it for a greater or less portion of its length, the innominate and left carotid having crossed obliquely in front of it at the episternal notch or thereabouts. An irregular arterial branch of considerable size is occasionally met with here, lying in front of the trachea, and ascending upon it to the thyroid body. This is the "*thyroidea ima*" of Neubauer and Erdmann; other large vessels may be occasionally found in this situation, but such an occurrence is more exceptional than the preceding.

Next, respecting the relation of the trachea to the external surface. Immediately beneath the cricoid cartilage, at its commencement, it is subcutaneous, the distance at which it lies from the surface gradually increasing from this point, until, opposite the top of the sternum, it is usually found in the adult at a depth of about one inch to an inch and a quarter. This, however, is sometimes increased in fat subjects, although it may be less in those who are emaciated.

In cases of acute inflammation of the larynx and of the neighbouring structures, there is sometimes so much œdema of the external parts that the distance of the trachea from the surface is greatly increased. Mr. Macnamara, of the Meath Hospital, reports a case in which, when operating, he found the trachea at two inches and a half from the surface, in consequence of this condition of the integuments.

Hitherto, most surgeons have fixed upon that part of the trachea which is immediately below the thyroid body as the most eligible spot for making an opening into it. Velpeau advises that the fourth, fifth, and sixth rings should be cut, and, if necessary, the third and seventh in addition. Some prefer the upper rings, considering that a division of the isthmus of the thyroid is less hazardous than an incision lower down, which incurs the probability of inflicting injury upon more important structures. Thus, Malgaigne, considering that the dangers increase in proportion as the wound approaches the sternum, prefers cutting the upper rings

of the trachea and dividing the isthmus of the thyroid body, respecting which he says—"After having divided the isthmus of the thyroid gland, and the venous plexus below it (if such cannot be pushed aside), the trachea is exposed. Then the patient should be directed to make deep inspirations in order to lessen the venous hemorrhage; and next, such vessels as continue to bleed should be tied." Mr. Lawrence adopted a similar method of operating in the cases which he reported in a paper read before the Medico-Chirurgical Society. ('Transactions,' vol. vi., art. xv.)

In reviewing the opinions which have been recorded by practical surgeons respecting the operation of tracheotomy, an almost unanimous admission that considerable difficulties frequently attend its performance is met with. Sir Charles Bell gives a graphic account of the difficulties which presented in a case in which he attempted to perform it. Having laid bare the trachea, he states that he was unable to make an opening, because, on account of the laborious respirations of the patient, the "variation in depth of the trachea was not less than an inch in inspiration and expiration." He then successfully performed laryngotomy instead; and he afterwards greatly preferred that operation, whenever it could be substituted for the former. M. Roux, in endeavouring to perform tracheotomy at "La Charité," on one occasion was compelled to apply six ligatures in the course of the preliminary incisions, and, after all, abandoned the operation for laryngotomy. On a previous occasion he saved the life of a patient by sucking the blood from the air passages, by which she had become asphyxiated, and afterwards employing artificial respiration.

Mr. Porter, unquestionably an experienced authority on this subject, although an advocate for the operation of tracheotomy, admits that it is frequently difficult. He adds, that "in children it is particularly so, as the depth of the parts to be cut through is increased by the accumulation of fat, generally met with in patients at this period of life, and besides previous to the age of thirteen or fourteen years, the trachea is comparatively of a small size."

It is, however, unnecessary to adduce numerous authorities for the purpose of showing that, under the most favourable circumstances, tracheotomy in the adult is an operation not generally easy of performance, and that in the child its difficulties are greatly increased. Here the trachea itself is so small, and the space between the two carotid arteries so limited, that the proceeding is a hazardous one, especially if the patient be unruly. Desault's strong preference for laryngotomy may be traced to the fact that, in the early part of his career, he lost a young patient in an attempt to open the trachea, from the delay occasioned by hemorrhage in the preliminary incisions, during which the patient expired. He also records a case of death in another abortive attempt, from wound of the carotid.

Of laryngotomy little need be said. The interval between the cricoid and thyroid cartilages may be opened with ease by a lancet puncture. It is usual to make first a short longitudinal cut through the skin, and then a single or a crucial one through the membrane. A little artery crosses this space, which is said to be sometimes the source of troublesome hemorrhage in an operation for laryngotomy.

In laryngo-tracheotomy, the isthmus of the thyroid body is cut—a circumstance which does not appear to have interfered with the performance of the operation, or to have been regarded as an objection to it. But incisions which deviate slightly from the middle line are liable to injure one of its lobes, and to cause profuse bleeding.

Of these three operations, tracheotomy is unquestionably the one most frequently resorted to, in the present day, when an opening below the glottis is required: and for the purpose of removing foreign bodies it affords very probably the best chance of success. It is often employed in cases where asphyxia is imminent—in circumstances where time is of the utmost importance, and the patient's danger is to be estimated by the lapse of minutes. Yet the quarter or even the half of an hour frequently passes before the desired opening can be made. Meantime the sufferer is rapidly losing his powers of life, and succour, when afforded, may have come too late, and that by a few minutes only. The delay is due to bleeding vessels, chiefly veins, which being distended through the medium of pulmonary obstruction, which commonly exists, pour out their contents with great rapidity; and these, it is feared, might be rapidly sucked in with the first powerful inspirations, through the tracheal incisions, and so cause irreme-

diable asphyxia. Cessation of the hemorrhage is therefore patiently awaited. It is, however, to be borne in mind that this delay may not necessarily be the best mode of meeting the difficulty. Such hemorrhage is greatly due to congestion of the venous trunks depending on obstructed respiration. Thus, some advise an opening to be promptly made into the trachea, as the most efficient method of checking it. On such grounds, the trocar has been employed to effect the required opening. It was supposed that the introduction of the tube upon the cutting instrument itself would effectually shut out blood, while it let in air. Experience, however, has not given much countenance to this method. The force required to make an opening sufficiently large by means of the trocar is considerable, calculated often to bring the opposite sides of the trachea into contact, and hence its employment has generally been considered a somewhat dangerous procedure. It is sufficiently obvious that laryngotomy offers a valuable method of making an opening into the air-passages, as occupying only the minimum amount of time which can be required for the most simple surgical operation. Its efficiency has been well shown by Mr. Prescott Hewett, in an article upon the subject in the 'London Journal of Medicine,' Feb. 1849. The result of a considerable number of carefully-made observations appeared to be, that in cases of œdema of the glottis, whether by extension of inflammation from surrounding parts, as in pharyngitis, tonsillitis, &c., or the swallowing of boiling water, acids, &c., the œdematous condition never extended below the margins of the true vocal cords. Consequently, laryngotomy is amply sufficient to meet the exigency in these cases. In tracheitis (true croup), and in diseases primarily affecting the larynx itself, it is generally considered necessary to make the opening lower down.

But an opening into the larynx is not compatible, as a rule, with the *habitual* presence of a tube afterwards. An important desideratum therefore exists—viz., an operation which can be *safely*, *easily*, and *rapidly* performed, capable of affording an adequate supply of air to the lungs when the glottis is closed, and at the same time *applicable to some part of the air-passages which does not resent the continued presence of a tube.*

Dr. Marshall Hall has for some time past entertained the idea that an opening might be made into the trachea by a simple puncture of the tissues, and subsequent enlargement of the aperture by a process of *dilatation*, to an extent sufficient to admit of the insertion of a tube. This latter also he has proposed to make of wire, in such a manner that, by pressure, its diameter may be considerably diminished, so as to admit of its being carried through the opening, which, by its own expansion, on the removal of the pressure, it then has a tendency to dilate.

The efficacy of this principle depends somewhat on the part of the trachea to which it is applied, as well as to the mode in which it is carried into practice. It will be at once apparent that dilatation can be made more easily and efficiently in proportion as the amount is small of the structures to be acted upon; and further, that the preliminary puncture can be made with more precision under the same circumstances.

Now, in examining the anatomical relations of the trachea, we find that part of it which is most easily reached from the surface, to be also the one at which the smallest danger is incurred from a puncture or incision. It is the part of all others where we find the fewest or least considerable sources of hemorrhage.

On theoretical grounds, then, a happy conjunction of circumstances distinctly points out the top of the trachea as the most eligible place for the operation.

Practically speaking, after attempting in several ways to effect an opening in this spot on the principle of dilatation, I may now venture to suggest a method which I have repeatedly executed on the dead body, and also performed on the living with great ease, and complete success.

It is an operation which may be considered "*safe*," because almost bloodless, and at the same time efficient to give relief,—"*easy*," because consisting of little more than a simple puncture, and one which *need not occupy more than a minute*, if minutes are precious; but which, when they are not so, may perhaps be advantageously extended to a little beyond that time.

The instrument which I have designed, with the assistance of the Messrs. Weiss, who have admirably carried out the intention, and employed in the instances

referred to, consists of a broad pair of forceps (something like ordinary dissecting forceps,) but of which a portion of each extremity, about one inch and a half in length, forms an angle with the handle. The points of them are furnished with a fine cutting edge, and the two blades meet accurately, so as to form, as it were, one blade together. (See Figs. 1 and 2.) By their means a puncture, or short incision, is made *transversely* through the skin and cellular tissue, and between the first and second rings of the trachea, so that their cartilages are not *cut or injured in any manner*. The blades being left free in the cavity of the trachea, and held there by the left hand, a screw placed in the handle is turned gradually, by which means the blades separate, and dilate without lacerating the structures around, until the opening is sufficiently large to permit a tube to be introduced. The screw being then turned back, the forceps may be removed, and the operation is completed.

The method of determining the required spot is simple. Let the patient be placed upon his back, his head lying on the same plane with the rest of the body; so that the neck is neither shortened, nor unduly stretched. The operator should sit or stand behind the patient's head, and with the forefinger of the left hand first find the larynx, then passing the finger downwards over the cricoid cartilage, the projection of which may be distinctly felt beneath, in the fattest subject, he should with it *define clearly* its lower border, so as to be perfectly assured of its situation, and which it is impossible with ordinary care to mistake.

Then holding the instrument in his right hand, so that the long axis of the blades (which are now closely applied to each other) has a vertical direction, they are to be introduced without force, strictly in the middle line, as near as may be, a quarter of an inch below the inferior margin of the cricoid cartilage, so that they may enter *transversely* between the first and second cartilages of the trachea, or thereabouts. Were the instrument to be applied *immediately* below the cricoid cartilage, it would, in most instances, encounter and perforate the first cartilage of the trachea, because, judging from the examination of the parts in several bodies, I find that the cricoid usually overlaps the latter somewhat, although this is not invariably the case. By introducing the point not more than a quarter of an inch lower down, it will readily slip in between the adjacent rings; the screw is then to be gradually turned as directed above. When the patient is restless and unmanageable, the larynx may be steadied by the unemployed fingers and thumb of the left hand, while the head and shoulders are commanded by an assistant.

As regards the tube to be introduced, a full-sized curved tracheal tube, of moderate length, is, I believe, decidedly preferable to the wire tube; at all events at the time of the operation. It is more easily introduced, is less liable to be clogged with mucus, and there is no fear of its collapsing from the pressure of the recently-dilated tisues upon it, which cannot be said of the latter. An additional opening, about the centre of the tube itself, in its upper wall, is, perhaps, useful as affording facility for the exit of air by the glottis, and so tending to prevent its function from falling into desuetude. (See Fig. 3.)

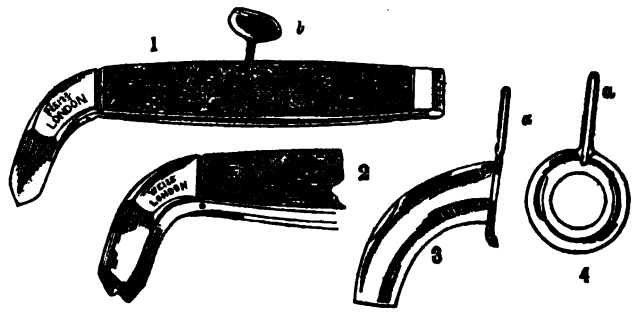


Fig. 1.—The instrument with the blades closed, as for introduction. (Drawn one half of the actual size.) *a*, the blades; *b*, the screw which separates them.

Fig. 2.—The same instrument with the blades separated.

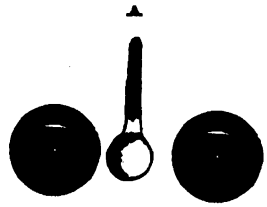
Fig. 3.—Tracheal tube, side view. *a*, a loop of wire, which affords the best means of securing the tube by means of tape in good position.

Fig. 4.—Front view of the same tube.

Having been desired by Dr. Marshall Hall, about a fortnight ago, to perform tracheotomy upon a patient suffering from epileptic fits of a most severe form, I adopted, with his concurrence, the plan just described. It was done at that gentleman's house, he, Dr. Russell Reynolds, and Mr. Squire, of the Marylebone Infirmary, who kindly gave me his assistance, being present; and it was observed by Dr. Reynolds that the air rushed through the artificial opening in less than thirty seconds from the commencement of the operation. The bleeding was exceedingly slight, scarcely worthy of mention. In cases, therefore, which require instant relief, it is presumed that this method will be especially applicable. It is, however, not proposed for adoption in the cases of children. The small size of the trachea, as it appears to me, would contra-indicate its employment, at least until the trachea is laid bare in the usual manner, and even then an opening would, perhaps, be more readily made with the knife. Why should not the operation, however, be performed in the uppermost rings of the trachea in such cases, rather than lower down?

Since writing the above, I may be allowed to state that the subsequent condition of the opening in the trachea of the patient referred to has been all that can be desired; no trace of a wound is discernible on examining the neck, simply an opening filled by the silver tube. It is satisfactory also to state that the worst concomitant symptoms of the fits have disappeared, and his condition generally, physical and mental, is already greatly improved. I may also add that I have had the pleasure of witnessing the performance of the operation with my instrument, by Mr. Lane, of St. Mary's Hospital, about a week since. The patient, a woman, had a considerably enlarged thyroid gland. It was, therefore, thought desirable to make a small preliminary incision through the skin and cellular tissue, just above the isthmus, which was pushed downwards to some extent with the handle of the scalpel, when, without baring the trachea, Mr. Lane inserted the instrument, and introduced a large tracheal tube between its blades with the utmost ease.—*Lancet, March* 5, 1853, *p.* 219.

59.—*Paracentesis Thoracis.*—An ingenious and simple expedient for preventing the entrance of air into the chest, during the performance of the above operation, has been shown to us by Mr. Hutchinson, the clinical assistant at the City of London Hospital for Chest Diseases. It consists in the adjustment of a little flap of soft wash-leather over the orifice of the canula in such a manner as not at all to impede the exit of fluid, but to act as a valve in entirely preventing the entrance of air. The mode in which this is accomplished will be at once seen by a glance at the accompanying wood-cut. The small end of the slip of leather (A) is passed through the chink in the rim of the canula, and the broad portion allowed to hang over its orifice. The leather should be very thin and flexible. Before using, it should be well moistened with warm water. It, of course, interferes in no way with the fitting of the trocar within the canula. The contrivance is an improvement on that used by Trousseau, who placed a skein of silk over the mouth of the instrument. We think it well calculated to supersede the more complicated instruments now employed for the performance of this important operation.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 25.



ALIMENTARY CANAL.

60.—CASE OF HARE-LIP.

Reported by George Yates, Esq., Resident Surgeon of Queen's Hospital, Birmingham.

[This case was complicated, by a portion of bone projecting between the edges of the cleft, in which two teeth were placed, the whole being covered over by a cherry-like protuberance of integument. As this obstruction interfered with the proper adjustment of the edges of the wound, it was removed by a strong pair of

forceps. The pins were removed on the fourth or fifth day, and fifteen days after the operation the patient was discharged; the wound having quite healed, and little or no scar left. Mr. Yates makes the following remarks:]

Hare-lip may or may not be combined with fissure of the palate, but the two are very frequently found together. The affection always occurs in the upper lip, and it assumes various and frequently even fantastic shapes. The cleft is sometimes simple; frequently, as in Green's case, there is a middle detached portion, and now and then two or more of such prominences. The cause of the disease is not obvious; it is most commonly attributed to an arrest of development; and is sometimes seen occurring in the same person or family, with malformations of the bladder, penis, feet, and other parts. Sometimes the affection appears to be hereditary. Why these malformations occur, we cannot say, and the answer generally given to the question—viz., that it is an arrest of development—is no answer at all, but only a statement of the fact itself.

Of course, there is but one mode of treatment to be adopted in these cases; but it is an important question, concerning which there is some difference of opinion, whether the operation should be performed while the child is young, or at what time of life it should be resorted to. Some would perform the operation before dentition commences. Lawrence "thinks it very desirable to remove the defect early on every account." Fergusson appears also to be an advocate for an early operation; but, on the other hand, Sir Astley and Samuel Cooper, "recommend that the operation should not be undertaken till the child is about two years old, and has cut its teeth," because of "the liability of young infants to sloughing, diarrhœa, fever, and particularly the danger arising from hemorrhage, and convulsions, which latter state is sometimes only to be checked by the removal of the threads, and allowing the original gap to be produced."

The propriety, however, of operation of the age of two years may well be questioned, as a child of that age is generally a very restless being, and not so likely to remain quiet as though only a few months old, nor nearly so readily to be confined and kept in order. Then, considering the dangers of operating on very young children, it would seem most proper that the operation should be put off for some years, or, at all events, till such a time as the child may be able to understand the importance of remaining quiet, and aiding the surgeon as much as may be in the after-treatment of the case. The age, therefore, varies at which the operation may with most propriety be attempted, somewhat advanced age being perhaps preferable, next infancy, and lastly childhood. There is one circumstance, however, which must not be overlooked in coming to a determination regarding time, viz., that the fissure of the palate frequently closes of itself after the lip has been operated on during infancy.

The operation, however it may be performed, is intended to bring two surfaces previously ununited together, and for this, of course, an abrasion must be produced; but when there is a middle projecting portion, as happened in the case related, it becomes a question whether it should be taken away or left, and authorities are not agreed on this subject. Much, of course, must be left to the judgment of the operating surgeon, and it sometimes cannot be decided until the edges of the fissure are pared and approximated, whether it is proper to cut the projecting portion away or not. If the edges of the lip will come together nicely over the projecting portion, and without too much stretching, it may then be advisable to leave the part, especially as in some cases the contour of the face would be improved by such proceeding; but if it causes stretching of the parts, and projects more than is convenient, removal must be accomplished, care being taken not to cut away too much, lest falling in of the lip occur. Cooper says, "When the jaw itself projects, the common preliminary step to the operation consists in cutting away the bony prominence." Chelius also gives the same opinion. Fergusson, however, is adverse to removing the part totally; and Desault also objects to the proceeding, "the measure being seldom proper," in the opinion of this latter authority, who prefers "reducing the projection of the jaw by means of the pressure of a tight bandage," or, as in a case related in 'Cooper's Dictionary,' the projecting bones may be pushed backwards by means of a "spring truss, worn daily for several hours." Of course, these means are to be put in requisition some time before the actual operation; but they must be both tedious to the surgeon and irksome to the patient, and the

writer cannot see that they are preferable to a slight use of the forceps or bone nippers. Gensoul, however, recommended the bending back of the projecting portion, and Mr. Haynes Walton has put the recommendation in practice with success, by partially dividing the projection, and then pressing it backwards.—*Med. Times and Gazette, Nov.* 27, 1852, *p.* 542.

61.—CONTRIBUTIONS TO THE SURGERY OF RUPTURE.

By John Gay, Esq., F.R.C.S., Surgeon to the Royal Free Hospital.

[Mr. Gay proposes to inquire into the merits and demerits of returning the parts, in a case of strangled hernia, into the abdomen—with and without division of the stricture. So long as four years ago he proposed to the profession a new plan of operating in these cases, and he believes that if a reverse of the ordinary line of practice were followed there would be a considerable saving of human life. The effects arising from a strangled condition of a portion of intestine would quickly subside, if the constriction was promptly and effectually relieved. After referring to a table of strangulated cases in the 'Guy's Hospital Reports,' by Mr. Poland, Mr. Gay proceeds,]

It is evident that but little confidence can be placed in the best efforts at manual reduction of the parts, in cases of strangled hernia, apart from division of the stricture; whilst, on the other hand, the evil effects of the force used, as well as of the protracted constriction which its employment necessarily occasions, give rise to an amount of fatality that fearfully counterbalances the presumed advantages of its being occasionally successful. The truth and importance of these observations are well attested by the following extract from Mr. Hancock's interesting and able work on Hernia:—

"Between the years 1834 and 1839, M. Boyer never operated until he had made prolonged attempts at reduction, and during that period nine cases were operated upon, of which eight died and one recovered. From 1839 to 1843 he employed the taxis to a much more limited extent. Seven cases were submitted to operation, of which four died and three recovered. From 1843 to 1846 he had almost entirely abandoned the use of the taxis; and out of fourteen cases upon which he operated, four died and ten recovered. Mr. Manee, on the contrary, during the same period, almost always proceeded to operation without employing the taxis. *Out of twenty-eight cases operated upon, two died and twenty-six recovered.*"

But the results of the taxis are often disastrously fallacious, as Mr. Cock, Mr. Teale, and others, have, in common with myself, observed. Not only has the sac with its strangled contents been together returned within the abdominal or pelvic boundaries, but it has frequently happened that a portion of the fluid contents of the sac, or of the intestine, has been forced back beyond the seat of stricture; the patient has been relieved, and the surgeon has been led to entertain a hope that the urgency of the case is at an end. A few hours, perhaps a night, have been allowed to pass, the symptoms have recurred with greater severity than ever, and, despite of the release of the parts by operation, the life has been lost. What, then, should be the rule of practice? Clearly, that in cases of strangled hernia the parts should be freed with the least possible delay; and by the use of those means which give the greatest promise of success. Is a trial of the taxis justifiable in any cases? 1st. Clearly not in those in which, however recently the contents of the sac might have become strangled, symptoms of constitutional disturbance have developed themselves; 2nd. Neither in those in which, from the existence of local pain or tension, we infer the encroachment of those lesions which, if unchecked, must prove fatal, and that possibly in the shortest space of time; 3rd. Nor in those cases in which strangulation has been protracted beyond a few hours, seeing that of all circumstances that are known to compromise the safety of the patient, none is more insidious, more replete with peril, than delay.

[The taxis should only be employed under chloroform, and that only with very gentle efforts for a few minutes. In the meantime, the friends should be warned of the danger; so that if the taxis fail, the operation may be proceeded with at once. Mr. Gay then goes on to say:]

For a case of strangled hernia, there is but one remedy on which the surgeon

can depend—the division of the stricture. This is no discovery of mine; it has again and again been reiterated, but every day's experience, and the revelations of practice in the various journals, show that the doctrine is still far from being generally believed in; or, if believed in, is not acted upon. The rule of practice which appears very generally to prevail, even at this moment, is, as I have already observed, that it is better to reduce the parts by any other method than by an operation; and that, consequently, this should be delayed until every other shall have proved futile.

The fact is, a very strong and general antipathy exists against the operation abstractly; and probably by those who have a lingering impression on their minds of the large incisions, the tedious dissections, and the wholesale exposure of parts which its performance some years since was wont to involve, this antipathy might be entertained with some considerable show of reason. It is not, however, warranted by the more than necessarily elaborate mode of dividing the stricture, which was adopted in the time of Pott and Hey; for these surgeons averred, that the operation, if well done, and in due time, did not prove the cause of death once in fifty times. Even now the usual operation has many defects; and in order to remove the prejudice referred to, it appeared to me, that in its place a mode of dividing the stricture was required, which should be simple of execution, free from danger, and still effective for all purposes; a method which should claim to be preferred to all other methods of effecting the reduction of a strangled hernia.

The defects of the old operation are—that (if I may so express it) it is too anatomical, and not sufficiently surgical: and that, in securing a very simple end, it is too prodigal of the means. The knowledge and skill required for its performance have not only served to lull all suspicion as to the actual necessity of so elaborate a procedure, but have so captivated as well the aspiring student as the practised surgeon, that its real elements of danger are commonly looked upon as its greatest charms. The simple objects of the operation should be, of course, the division of the stricture, wherever situated; the method, that by which a knife can be brought most readily to bear upon it. According to the old operation in femoral hernia, the form and the extent of the preliminary incisions are to be determined by the size and shape of the hernial tumour; but what relation these latter circumstances have to the seat of stricture, so as to necessitate such a modification of the operation for its division, I cannot divine; seeing that, under every conceivable condition of the tumour, the seat of stricture, according to the variety of hernia, might be, and is, for the most part, the same. This and other unintelligible absurdities appertaining to the method referred to, quite suffice to account for, if not justify, the dread that has generally been entertained with respect to it.

The method of operating to which I have called the attention of the profession is, I believe, free from these objections. By it the seat of stricture is reached through a small wound made in healthy structures immediately contiguous to the neck of the hernia, and so as not in any way to interfere with or disturb those parts of the protrusion not directly implicated in the act of strangulation. It has nothing to do with the size, shape, or even direction of the tumour, for it deals with the stricture, and with that alone, so long as that comprehends the seat of the mischief; whilst, at the same time, it allows of any modifications that extraordinary circumstances or conditions may, in the course of the operation, be found to demand. It is not, as some have alleged, a species of subcutaneous section, for the whole process may, if required, be distinctly seen; although, with a moderate acquaintance with the anatomy of the region, the sense of touch is alone necessary for its execution.

I have now operated according to the plan advocated many times, and have only had to repent of the use of the taxis and of delay. In favourable cases, where the stricture has been outside the sac, the operation has only taken from one to a very few minutes for its performance; whilst the recoveries, in comparison with those after the old operation, have been, on an average, as seven days to thirty. The operation has been, I am pleased to learn, adopted by several of our leading surgeons, but it is not without the utmost gratification that I extract the following remarks from a clinical lecture by the distinguished professor of surgery at King's College; for not only do they confirm the opinion I have never ceased to entertain of the method of operating which I have advocated, as well as of the

principles upon which it is based; but, coming from so high an authority, and after so long and deliberate a trial as that which Mr. Fergusson has done me the honour to give to my views, they abundantly justify me in still claiming for them the serious attention of my professional brethren.

Mr. Fergusson says, after giving a very clear account of the method of performing this operation: "Now, this I consider a most simple proceeding, ... and I think it deserves much more attention than it has already obtained at the hands of practical surgeons. I have for the last few years rarely performed any other operation. The incision in the skin admits of the sac being opened or not, as may be found advisable. I feel certain that those who see this operation performed, will confess that there is some advantage over that which is usually done, both from the facility with which it is accomplished, and from the simple aspect of the whole process. I shall avail myself of other opportunities of calling your attention to this method, as I deem it worthy of your careful consideration; in fact, I should not be doing my duty as your teacher, if I did not bring before your notice what I myself deem a very great improvement in connexion with hernia, as the proceeding referred to is really not much more than the simple operation of the taxis."—*Lancet, Nov.* 20, 1852, *p.* 466.

62.—*On the Operations for Crural Hernia.* By WILLIAM FERGUSSON, ESQ., F.R.S.—[Having performed the operation for the relief of this form of hernia after the simple manner recommended by Mr. Gray, Mr. Fergusson thus expresses his opinion of its value.]

I consider it a most striking improvement in the operation for hernia, giving it a character little less formidable and difficult than the taxis; and of late years, I have done hardly any other operation but this. There can be no doubt that a cutting operation is required every now and then in instances of strangulated hernia, notwithstanding that certain enthusiasts of very limited experience—men who, perhaps, have only seen fifteen or twenty cases of the disease in their lives—have tried to prove that it is hardly ever necessary; and, when it is required, it is best and safest to practise the operation in the simplest way possible, such as may be nearest to the taxis. This was the feature in the proceeding devised by Petit, consisting in returning the hernia without opening the sac. Mr. Gray, however, has made the process even still more simple, for he hardly meddles with the body of the tumour at all, and divides but little of the skin. In modern surgery, it is a remarkable feature that we divide tissues extensively without wounding the skin more than by a simple puncture. You may recollect seeing me divide subcutaneously the whole of the deltoid muscle, in a remarkable case of luxation of the head of the humerus, although I only made the smallest possible opening in the skin.

This principle is, to a certain extent, carried out in this method of operating for strangulated hernia, for only a very short cut is made through the superficial tissues, and the knife is readily inserted through this opening and carried to Gimbernat's ligament, which generally constitutes the stricture. Of course the operation will not suffice in every case, for every now and then it will be necessary to open the sac, in order to look at its contents, when there is reason to believe that the intestine is in a condition not fit to be returned. In cases, however, where the patient is seen early after the strangulation, it may not be necessary to open the sac, for the more simple the proceeding the better it is, and I have now alluded to this case particularly to point out to you again the superiority of Mr. Gray's mode of operating.—*Med. Times and Gazette, March* 12, 1853, *p.* 263.

63.—CASE OF STRANGULATED HERNIA.

Under W. FERGUSSON, Esq., F.R.S.

[Harriet Otley, aged 35, was admitted into King's College Hospital at 11 o'clock on the morning of the 14th of October, with a strangulated crural hernia on the

right side. The symptoms had commenced a week previously, and the medical practitioner, who had treated the case, not only did not discern the hernia, but had given strong purgative medicines for five days, without relief. On admission she was placed in a warm bath and the taxis applied. The tumour was returned, but the pain was more intense than before. At three o'clock, p.m., as the symptoms had not abated, Mr. Bowman, in the absence of Mr. Fergusson, determined to explore the tumour. The tissues outside the sac were found to be of a very dark colour, and gave off a very fetid smell. The sac did not contain any intestine; no obstruction being found, the wound was closed, but the patient gradually sunk at 4 a.m. on the 15th.]

On making a *post-mortem* examination, the whole of the intestines were found inflamed and covered with a film of lymph, which glued the opposite surfaces of the contiguous coils together. This was more particularly apparent in the small intestine. About six inches of the ileum, which had been confined within the hernial sac, were in a gangrenous condition; and in the middle of the gangrenous portion, at the free border of the gut, was a hole about 1-12th of an inch in diameter, through which feculent matter had escaped. Above the gangrenous portion was a mark of constriction, showing where the gut had been strangulated. The hernial sac was about the size of a pullet's egg, and was gangrenous. The pelvis contained some turbid serum having a feculent odour.

Now, in this case are presented some features of very great interest and very worthy of your attention. It will be seen that, when the woman was first admitted, the taxis was employed, and the hernia was reduced into the abdomen. When such a circumstance has been effected, we naturally look for an amelioration of the symptoms which had been produced by a hernia in a state of strangulation. No such improvement was manifest here, but, on the contrary, matters continued in the same state as before, or, rather, were aggravated; and Mr. Lawson began to conjecture that he might have ruptured the intestine, although he had been careful in not using any violent pressure. He was more inclined to fancy this from the fact of the patient feeling a sudden increase in pain after the gut had been reduced; and we know such is the symptom after rupture of the intestine has taken place. However, this accident is so rare, in the hands of a careful man, that we seldom calculate upon its occurring; and in this instance, so little pressure was used that it was hardly possible to account for it in this way. The taxis had not been employed before, for the case was altogether overlooked by the practitioner who had attended her. In this respect it is similar to many, I am sorry to say, which we have opportunities of seeing. It has occurred to me to witness many cases where most extraordinary ignorance or carelessness had been displayed. I have seen blisters placed upon the abdomen to relieve inflammation, when, at the same time, there has been a large tumour in the groin. I do not mean to assert that in every instance where a hernia has been overlooked, the practitioner is to be blamed, for I have known cases in which persons even of tact might well be deceived.

[If, in this case, the hernial tumour had been immediately cut down upon, and the gangrenous portion divided so as to form an artificial anus, there is just a possibility that the patient might have been saved. But then it could not be known that the intestine was in that condition until after death. Mr. Fergusson concludes:]

This case, which is a melancholy instance both of the carelessness and ignorance which is exhibited by some practitioners towards their patients, is another strong proof of what I have often before stated to you—viz., that in every case of strangulated hernia a careful attempt with the taxis should be made, and that, if it does not succeed, an operation for the purpose of dividing the stricture should be resorted to as soon as possible. In no one instance of surgical disease is delay or improper treatment more dangerous, and you can never have a more striking proof than is exhibited in the unfortunate case which has called forth these few remarks. —*Med. Times and Gazette, Nov.* 20, 1852, *p.* 507.

64.—*Mechanical Support in Prolapsus Ani.* By JAMES DEANE, Esq.—[In the case which Mr. Deane relates, prolapsus had existed for sixteen years. The patient was a female, aged 25. On examination, external piles were found, and a fold of integument encircled the anus, to the extent of three-eighths of an inch. Internal piles also existed, with a rugose and puckered state of the lining membrane of the bowel. The external piles, and the fold of integument (no doubt originally protruded mucous membrane), were removed by excision, but with not the slightest benefit to the prolapsion. The following plan, however, was adopted, with the utmost possible success.]

The plan may be described thus;—Cover a chamber utensil with a strong flat board, taking a circular form, and projecting one inch; let into the edge of the wood three or four pieces of wood, to keep it fixed on the chamber-pot; make an opening on the surface of the board, a little behind its centre, just large enough for the anus to act; and surround this opening with an elevated ridge, to support the entire perineum and sides of the anus during evacuation. The anal foramen which I have used, has been oval, its long diameter being antero-posterior, and four inches in length, and its transverse diameter being two inches and a half. It has been abrupt, not bevelled; the sharpness of the edge being removed. The ridge has been half an inch high, and has extended all round the anal foramen, and has been less than half an inch from it. The great object is to keep it within the ischia. Some of my patients have felt more secure and more comfortable *with*, and some *without* this ridge. For females, I have had a large anterior urinary fissure, half an inch wide towards the middle of the board, and opening into the foramen, and gradually enlarging forwards to the size of three inches in front. With males, I have recommended another utensil in front.

[We suspect that many if not most of such cases as this, are not real prolapsions of the anus, but only of the internal membrane of the rectum,—very often with hemorrhoids attached to it, or perhaps a vascular nævus which bleeds profusely. In such a case, the application of nitric acid to the prolapsed portion is valuable; it causes a portion of it to slough away, and the whole part becomes narrower and stronger. Prolapsus ani is in this way frequently cured.]—*Association Med. Journal, Jan.* 14, 1853, *p.* 34.

65.—*Fistula in Ano.*—M. Alquié ('Gaz. des Hopitaux,' No. 48,) states that he has found it a very beneficial practice to cauterize the lips of the wound by means of nitrate of silver, after the incision of fistula, premature adhesion being prevented, without the necessity of interposing tents, lint, or other material. The nitrate should be applied, but only to the lips, twenty-four hours after the operation, and repeated first every, and then every other, morning. He was led to the practice by observing the condition of wounds when touched by the nitrate. The pellical or superficial eschar is eliminated in a day or two; the surface so covered being unsuited to contract adhesions. This covering also enables the wound to tolerate the presence of the intestinal discharges which pass over it. Most persons complain little of the pain caused by the application; but in some cases it is severe.—*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 572.

66.—CASES OF HEMORRHOIDS TREATED BY NITRIC ACID.

By DR. WILLIAM COOKE.

[The following cases are illustrative of the value of nitric acid in this painful and tedious affection.]

Case 1.—In May, 1848, I was consulted by a gentleman, of a highly nervous temperament, relative to what he had considered a prolapsus of the rectum. The protrusion only took place on his having relief from the bowels, but he then suffered great inconvenience for a considerable time, the distress not ceasing until the protruded parts returned within the sphincter.

Taking a favourable opportunity for examination, I found that the protrusion did not consist of the bowel itself, but of hemorrhoids, two of them the size of

large walnuts, and one or two smaller. As the patient had to make arrangements to withdraw from important duties while under treatment, he wished a consultation, that the most decisive measures should be adopted. At this consultation it was suggested and agreed that nitric acid should be applied.

May 18.—I directed that opening pills should be taken at bed-time, and an aperient draught early in the morning, for the purpose of bringing down the diseased parts as fully as possible. Having accomplished this, I applied strong nitric acid, by means of a mop of lint on the end of a slender wooden handle, mopping the surface of each pile fully. It was important to have ready, as had been suggested, some liquor potassæ and a dossil of lint, in the event of any acid touching the healthy skin. The pain, for a short time, was severe; but, after waiting about a quarter of an hour, the parts were replaced by pressing them up with a compress of lint. An anodyne draught was given at bed-time, and a good night secured.

At the end of a week, I did not think the effect produced was sufficient. The piles were much hardened, as if blood had coagulated densely within them; but some parts of the covering appeared to retain vitality. I repeated the application, and, as the parts were now less sensitive, I inserted a tenaculum, and drew them down more than at first. Although well mopped, the pain was not so severe as at first. An anodyne was given at night, and an aperient after the lapse of two or three days. A little sloughing took place, but very little pain was suffered. Soon nothing came down, and in about three weeks the gentleman considered himself well, and has continued so.

Case 2.—A stockbroker, about 48 years of age, who had suffered for some time from piles, which not only annoyed him by their protrusion, but they often bled copiously. He applied to me in the summer of 1848, and used various remedies without effectual relief. The affection was not nearly so severe as in the preceding case, but it was enough to make him exceedingly uncomfortable.

In October I applied nitric acid; the pain was inconsiderable, and one application sufficed. He remained from business only two or three days, and had no return.

Case 3.—In May, 1849, I was consulted by a lady whose health had suffered greatly from external and internal piles of considerable size. They often bled, and frequently became inflamed, when, as usual, walking was attended with much pain. Some of these hemorrhoidal swellings constantly existed, others protruded at the time of an evacuation of the bowels, and occasioned severe distress, until they were returned within the sphincter, and this was not unfrequently delayed for some hours.

This patient lived seven miles from town, but came to the house of a friend on the 24th of May, to receive my visit, and, considering the state favourable for an application, it was proposed to her. Although she consented, it was with great terror, and, on the slightest touch, she made violent shrinking efforts, and drew the protruding portions beyond reach.

On the 29th, she again came to town, and, having suffered but little pain from the preceding application, she had gained courage, and the circumstances were now favourable for a more extended application.

June 4.—The affection had nearly disappeared, but, as coming to town was inconvenient, the acid was re-applied, and, in a fortnight, I was informed that she was quite relieved.

Some pain, of course, attended each application, but it was of short duration; and after waiting about ten minutes, the portion usually retained within the rectum was gently passed beyond the sphincter, and ease was experienced. The patient was not only relieved of local pain, but her long and severe suffering had acted powerfully on her general health, which now remained good.

Case 4.—The Rev. Dr. G. had, for many years, been subject to hemorrhoidal losses of blood. The loss at times had been rather profuse, and, being a weak and nervous man, and the hemorrhage commencing when he was but a young man, it had contributed to prevent the development of physical energy. He became settled as pastor of a congregation, and married an interesting and amiable young lady; but, although having a cultivated mind, and everything to make his position honourable and useful, yet a false conviction of moral inadequacy rendered him very unhappy. His morbid excitability, the weakness and perturbed

state of his nervous system, extended to his conjugal life, and entirely prevented his enjoying it. Such was his nervousness, that he felt quite unable to consummate marriage, but he was subject to frequent emissions. He was a man of scrupulous moral propriety, was concerned for his wife's happiness, and, though fully aware that he suffered from physical causes, he grieved not only for himself, but for the amiable person to whom he had become united, and reproached himself severely for having married. He resigned his ministerial office, and opened a classical school; and, after a few years, he had gained a somewhat better state of health, and resumed the ministry. He still remained highly nervous, was a sufferer from his early enemy,—piles and occasional hemorrhage,—and never could conquer his conjugal infirmity.

These melancholy details are premised for the purpose of showing to how great an extent the general system may suffer from the local affection in question; but the patient himself, in his prevailing tendency to indulge in self-reproaches, ascribed a good deal to the indiscretion of early puberty.

In 1849, when he was probably about 45 years of age, he consulted me in especial reference to his piles. I made examination immediately after he had passed fæces. The protuberances were of considerable size—two as large as walnuts before denuded of their green husk—others smaller, and a number of excrescences surrounded the anus. As he was then residing at a distant part of the country I proposed that he should take lodgings near me, in which he concurred.

On October 20th, I made the first application, mopping the surfaces well. The pain was considerable, but did not last long. As the disease had existed so long, and was so considerable, the application was repeated twice at intervals of a few days. The pain lessened each time. Sloughing took place, accompanied with a dark and offensive discharge, and no protrusion now occurred. On the 30th I cut off the small pendulous excrescences, and in a few days he was quite well. He remained free from protrusion and hemorrhage.

Case 5.—Captain B., of the merchant service, consulted me in March, 1850, respecting a severe dyspeptic state in which he returned from a voyage of seven or eight months. He had suffered much on the voyage from constipation, want of appetite, debility, losses of blood per anum, and protrusion at the time of passing fæces. His appearance was very delicate, quite unlike that of the weather-beaten mariner. Attention was first directed to general treatment by aperients, bitters, and regulated diet, and by which, and the kind attentions of his wife, and the comforts of a well-regulated home, his health became much improved. On the 18th of March he discontinued medical treatment, except as to the occasional use of an alkaline aperient. It was agreed, however, that, before he started on another voyage, I should have an opportunity of examining what he called the "bowel coming down," from which he had loss of blood occasionally, and much inconvenience after each dejection. He was so busily occupied with the duties of his ship, that no appointment could be made until the 27th March, when, having taken an aperient medicine over night, I ascertained that the protrusion consisted of piles, two of them presenting on one side of the anus; their surfaces looked very irritable, and there was a slight sanguineous oozing from it. As all things were favourable, I applied the acid well to the surface of both the protuberances. The pain was severe for fifteen or twenty minutes, during which time the parts were allowed to remain external; then, by means of a compress of lint, I passed them into the rectum, and the pain subsided. An anodyne draught was given at night.

On the 28th I found him quite easy, and the bleeding and protrusion ceased. Very soon afterwards he started on his voyage, provided with instructions and means to counteract constipation and also bleeding, should it recur; but on his return, some months afterwards, he reported that he had suffered no inconvenience during the voyage; his bowels had generally been regular, and his health good.

Case 6.—A gentleman, about 36 years of age, married, and having a family, and engaged largely in business requiring activity, became the subject of what was considered prolapsus ani. Always after relief from the bowels he suffered considerably, and occasionally the protruding part became inflamed, when surgical assistance was required. He had been advised as to various plans of treatment, but none had been successful in curing the disease. At length the sphincter lost, to some extent,

the power of controlling the parts, so that they would sometimes descend by a sudden muscular effort, and occasion great inconvenience. Under these circumstances, the patient had recourse to a supporter, the pad pressing rather strongly on the anus. The instrument was very well made, and answered its design, keeping the patient tolerably comfortable so far as exercise was concerned; but it was still a formidable thing to have relief for the bowels. On account of the proceeding it required, and the length of time during which uneasiness remained, it was usually sought in the evening, when business was over. Warm water and a soothing or astringent lotion were required. The protruded part was sometimes irritable, and not unfrequently bled. It was often necessary to wait a considerable time before the part could be returned, and the instrument applied.

I had known for some years of the existence of this gentleman's trouble, but was not specially consulted about it till 1851. At the end of July he requested my advice. It was not in this case necessary, as in some others, to give opening medicine to bring the offending parts into view, for, on the removal of the instrument, a little straining brought them fully down. The surface of the protruded part was nearly as large as the palm of the hand,—three, if not four inches in diameter,—made up of a cluster of hemorrhoids,—some large, others small; some parts red, and others livid. The mass stood out prominently. In its inequalities and form it gave me much the idea of a large love-apple. The gentleman was willing to undergo any measure I would recommend, and had familiarised himself with the means commonly used in the extirpation of these affections,—viz., excision, ligature, and caustic,—and required me to discuss with him the advantages and disadvantages of each. For reasons it is needless to detail, the latter form of treatment was preferred.

On the 1st of August, with the aid of my son, Dr. W. M. Cooke, the nates being well separated, I applied very concentrated nitric acid to the whole surface. The pain was very severe, of course, and continued for fifteen or twenty minutes. I then carefully returned the parts, and the patient went to bed and took an opiate. His bowels remained quiet for two or three days, and on having relief only a small protrusion occurred.—On the 6th, he took a rhubarb and magnesia draught, and some sloughy and bloody matter accompanied the motion. Slight irritative fever with sickness ensued, and was relieved by effervescing medicines. At about the end of the week there was considerable discharge, and for two or three days slight erysipelatous inflammation surrounded the anus; poultices were applied. At the end of a fortnight acute pain was felt beneath the point of the sacrum and coccyx, and after a day or two a swelling presented at the posterior part of the anus. Fluctuation became perceptible, and the swelling was punctured, and there flowed out about two ounces of a most offensive mixture of pus and blood. Tonics were now prescribed. The discharge from the abscess continued for two or three days, gradually losing the fetid odour. From this period no inconvenience, except debility, was suffered. At the end of the month the gentleman went to Dover, partly to expedite the recovery of strength, but in part to superintend works in progress. No inconvenience has since been suffered, and, of course, as there was, the non-necessity of artificial support, the use of the instrument was most gladly avoided.

Some doubt has been entertained whether the acid acted by coagulating the blood in the pile, or by producing sloughing of the coats. In the more severe of the preceding cases, it was evident that partial destruction took place; in the milder cases that result was doubtful, in consequence of there being no opportunity of subsequent examination.—*Med. Times and Gazette, April* 2, 1853, *p.* 343.

ORGANS OF URINE AND GENERATION.

67.—CASES OF STRICTURE.

Under John Hilton, Esq., F. R. S.

[In the first case Mr. Hilton relates that the patient was a married man, 43 years old, who affirmed that he had never had gonorrhœa or syphilis, and thought that his stream of urine had always been smaller than in most men. He had previously

suffered a similar attack, which was relieved by leeches, warm baths, and catheters. About five weeks before admission he suffered under another attack; and all the attempts to pass a catheter by his medical adviser had failed, though zealously repeated. Warm baths and other measures now failing to give any relief,]

At nine, p. m., unsuccessful attempts to draw off the water were made by the dresser and assistant-surgeon, these attempts being followed by urethral bleeding. A large dose of opium and a hot bath were ordered. At one o'clock the patient was seen by Mr. Hilton. The symptoms being in no way relieved, another dose of opium was administered, and at three in the afternoon of the 24th of February (the day of admission), as no catheter could be passed into the bladder, Mr. Hilton punctured that viscus through the rectum with a long trocar and canula, and drew off seventy-two ounces of dark coloured urine; the canula, secured by tapes, being left in the bladder. Two grains of powdered opium were then ordered. The relief was immediate, and the patient expressed himself as feeling considerably better.

Feb. 25th, (second day.)—He passed a good night; the febrile symptoms have disappeared, and the man is quite easy and comfortable.

Feb 27th, (fourth day.)—The bowels have not been open since the operation; the patient complains of tormina, and thinks that he could have a motion if the canula were removed. All the urine flows by the latter, none through the urethra, and pressure on the lower or any portion of the abdomen gives no pain. Pulse 80; tongue clean and moist, appetite good. Ordered, five minims of nitro-muriatic acid, fifteen of tincture of hyosciamus in infusion of cusparia, every sixth hour; one ounce of castor-oil to be taken immediately.

Feb. 28th, (fifth day.)—The bowels were opened five times very soon after taking the oil; no appetite; the tongue is white and moist; pulse 84. There is very slight tenderness over the region of the bladder, but no peritonitis; the canula still lies in the rectum and bladder, and a stopper is used to prevent the constant dribbling of urine; the stopper is however removed when the patient desires to make water.

March 3d,(eighth day.)—The bladder has been washed out, and the water returned quite clear and inoffensive; the patient can retain his urine for five hours at a time. General and local symptoms are going on harmoniously well.

March 7th, (twelfth day.)—Mr. Hilton introduced a very small flexible catheter along the urethra into the bladder, and allowed it to remain with a plug, to be removed when the patient wishes to pass urine. He feels very well; the appetite is good, and the bowels freely open, the canula being still in the rectum.

March 8th, (thirteenth day.)—Mr. Hilton exchanged the small flexible catheter for one of larger size, and allowed a pint of porter.

March 12th, (seventeenth day.)—The canula was this day removed, and was found to be incrusted with urinous deposits; the catheter is still kept in the urethra and bladder, and the patient can hold his urine for four hours at a time. He feels very well, and is improved in his general appearance.

March 19th, (twenty-fourth day.)—The patient has continued to progress favourably; No. 6 catheter goes into the bladder, easily, and he was discharged in a much better condition than was usual with him.

Here you will be pleased to notice that the canula was left sixteen days in the bladder, and when removed there was no subsequent escape of urine into the rectum. On comparing the relative length of time required in this patient's case, to produce an equal degree of relief by the two kinds of treatment—viz., catheterism in his first, and puncturing through the rectum in his second attack—you will find, in addition to suffering a good deal by pain and loss of blood in carrying out the first plan, six weeks were necessary for its accomplishment; whilst, in the second instance, the good results were arrived at on the 23rd day of treatment, the canula being removed from the bladder at the end of sixteen days.

If you ask now how long the canula ought to be left in the rectum, I shall answer, until the urine passes freely and voluntarily through the urethra, and until a catheter may be passed through that canal.

[In the second case the patient, also a married man, was admitted Oct. 13, 1851. Twenty years ago he had suffered from gonorrhœa, which had left a gleet for some time. The complaint, however, seemed to have originated, about eight years before

admission, in a fall by which the testicles and perineum were wounded. Ever since he has had difficulty in passing water. About half-past six on the morning of the 13th, he found complete inability to void his urine, without any apparent cause. Serious symptoms soon coming on, he sought the hospital; he was placed in a warm bath, and two grains of opium given him. Two hours after, catheterism was attempted, but totally failed, the patient losing from two to three ounces of blood at each operation.]

In consequence of the patient's great distress, Mr. Poland, being on duty for Mr. Hilton, determined to puncture the bladder per rectum.

He was therefore placed at the edge of the bed, with the pelvis raised by a pillow, and the legs fixed as for the operation of lithotomy. On passing the index-finger of the left hand into the rectum, the posterior-edge of the prostate gland could not be distinctly felt; the trocar and canula were, however, introduced, and made to puncture the bladder through the walls of the rectum. Three pints and a half of urine were evacuated, the fluid being of a dark, coffee-coloured appearance, and of scarcely any odour; the patient felt immediately relieved.

On adjusting the second tube with the tapes, the canula was accidentally drawn out of the bladder. Mr. Poland thereupon endeavoured to find the opening with a director, but did not succeed; it was, however, thought that probably, when the bladder became distended again, the urine might make its way through the opening, and that it could then with facility be found. This did not, however, take place for twelve hours after the operation. The distress of the patient was so great from distension of the bladder, that it was found expedient to puncture that viscus again, the suffering being greater than on the previous day.

The trocar was then introduced *de novo*, and about three pints of urine mixed with blood escaped. Two grains of opium were given at once, and were to be repeated next morning.

Oct. 15th, (third day.)—Feels very comfortable; tongue furred; pulse 60, full and hard; no headache; some thirst; moist skin. Has slept very little in the night, not from any pain, but because he is not accustomed to sleep on his back. About forty ounces of urine have been passed through the tube during the night; the renal secretion is tinged with blood and alkaline.

Fourth day.—Pulse small and wiry, about 90; tongue furred, but moist; the countenance is more anxious, but there is no pain. Since yesterday, at ten o'clock, about sixteen ounces of reddish-brown, fetid, and ammoniacal urine, of specific gravity 130, has been passed. The fluid is very turbid, and there is a copious flocculent deposit, partly dissolved by heat. Eight ounces of wine per diem were ordered.

Fifth day.—The patient does not feel so well to-day; the tongue is much injected, purple at the edges, and furred in the centre; pulse increased in frequency, and weaker; a quantity of turbid ammoniacal urine has been passed through the canula; the renal secretion is much thicker than yesterday, and more fetid. As the bowels had not been relieved since the operation, two pills of calomel and colocynth were ordered, with one ounce of castor-oil in the morning.

On the sixth day there was much improvement; the bowels had been relieved several times, and urine had come several times through the meatus, which caused a severe scalding pain along the urethra. A mixture of acetate of ammonia with powdered rhubarb was ordered, and the opium was to be continued at night.

Seventh day.—Progressing favourably; appetite improved, and the patient feels much stronger.

[On the 5th of November this patient is stated to have perfectly recovered.

After detailing another case of a similar nature, in which the bladder was punctured through the rectum with perfect success, Mr. Hilton concludes thus:]

Let me now, in a few words, place before you the objections which have been brought against an operation, the useful application of which these lectures have been intended to exemplify.

1st. It has been alleged that there is great danger of wounding the peritoneum and of causing peritonitis; but you know, at present, that, in puncturing the bladder through the rectum, the peritoneum is not wounded at all.

2nd. Wounding the vesiculæ seminales or the vas deferens. The experience of

Guy's Hospital shows that this accident happens very seldom, and when it does occur it is not of much importance.

3rd. It is objected that it is very difficult to retain the instrument in the bladder and rectum, but this apprehension need not be entertained, for you have seen how steadily our patients now retain the canula in the rectum, thanks to the improvements in our instruments.

4th. The operation is opposed, because a communication between the bladder and rectum may persist for an indefinite period. This, indeed, may happen, but is very rarely the case. Indeed, I may safely say, that most of those who uprightly and without prejudice find fault with the operation, are but very imperfectly acquainted with the actual results of the numerous cases which have thus been treated. Between twenty and thirty operations of this kind have been performed in this hospital within the last few years, with a success as to result the most encouraging; and I doubt whether a like success could have been attained in cases of equal severity by any other mode of treatment; and that, after all, is the important point for our consideration.

If the operation of puncturing the bladder through the rectum be, as I believe it to be, devoid of most of the dangers which have been, perhaps, only theoretically attached to it, and also free from many of the dangers and difficulties of the other or substitute operations, it is surely time that surgeons should give it more consideration and more credit for good on its own merits than it has received of late years—*Lancet, Nov.* 20, 1852, p. 460.

68.—ON THE SOLUTION OF URINARY CALCULI IN DILUTE SALINE SOLUTIONS, AT THE TEMPERATURE OF THE BODY, BY THE AID OF ELECTRICITY.

By Dr. H. Bence Jones, F.R.S. (Read before the Medical Society.)

This paper contained the record of a number of experiments made to determine whether, out of the body, urinary calculi could be dissolved by placing them in dilute solutions of nitrate of potash and other salts, and then decomposing the solution in contact with the calculus by means of the galvanic battery. The urinary calculus was carefully dried and weighed, then fixed between the poles of a galvanic battery, after which it was immersed in a solution of nitre, and at the end of the experiment it was re-dried and re-weighed. The loss of weight gave the effect which was produced. The different calculi which had been used were also exhibited, showing the different degrees in which the various kinds of urinary calculi are dissolved when submitted to this treatment. The conclusions at which the author arrived may be thus stated. In a solution of nitre containing twenty grains to the ounce, kept at the temperature of the body, uric acid calculi can be dissolved by the aid of electricity, at the rate of from two to nine grains an hour. The solution takes place at the alkaline or negative pole. In the same time, and under the same circumstances, phosphatic calculi can be dissolved at the rate of from two to twenty-five grains. The solution takes place at the acid or positive pole. Calculi, consisting of oxalate of lime, proved to be far less soluble, usually not more than half a grain an hour, and at most two grains being dissolved. At the conclusion of the reading of the paper, the author stated, that he had been engaged in making further experiments with a solution of nitrate of potash containing only ten grains to the ounce; and he exhibited some large uric acid and phosphatic calculi, which had been partially dissolved by the decomposition of this solution at the surface of the calculi. He also showed a catheter, or lytholyte, made by Weiss, which fulfilled the conditions requisite in an instrument for effecting the solution of urinary calculi in the body. It resembled an ordinary lithotrite, but the blades were—1st, isolated so as to conduct the electricity to the surface of the stone when it had been caught; 2ndly, the external surfaces of the blades were guarded, so that in case they came in contact with the mucous membrane, no chemical action would be there set up; 3rdly, a double channel for the injection of the solution of nitre was formed inside the instrument. Lastly, the author stated, that, although many difficulties would have doubtless to be overcome before he could lay the result of his experiments within the body before the Society, still they would only be mecha-

nical difficulties. The principle, which consisted in setting up mechanical action at the spot where it was wanted, whilst elsewhere a dilute neutral solution was present, left nothing further to be desired; at least so far as the solution of uric and phosphatic calculi was concerned. At present, by the aid of the lithotrite, mechanical force is applied to the surface of the calculus, and the stone is passed in fragments. At some future time, by the aid of the litholyte, chemical force will be set up at the surface of the calculus, and it will be passed in solution, or as an impalpable precipitate.—*Med. Times and Gazette, January* 1, 1853, p. 21.

69.—ON THE CAUSES OF DEATH FROM LITHOTOMY.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[The accidents which are of the most formidable nature after this operation are—hemorrhage, infiltration of urine into the cellular tissue with suppuration and abscess of this structure, inflammation of the bladder, peritonitis, purulent infection, and secondary disease of kidneys. Dangerous hemorrhage is stated to be of uncommon occurrence. Mr. Liston stated that he had lost but one patient from bleeding out of 100 operations.]

Hemorrhage, properly so called, may arise from division of the superficial artery of the perineum, the transverse artery, or the artery of the bulb, and the internal pudic itself. In some cases the accident arises from the surgeon's making his incisions in an irregular manner; but the most frequent cause, I believe, is some irregularity in the origin, course, or relations of the numerous blood-vessels distributed to the perineum.

As I have already observed, the operator may, in making his incisions, err in three ways; he may commence his incision too high, or he may incline it too much laterally towards the tuberosity of the ischium. Each error may bring its peculiar consequences after it.

When the incision is commenced very high up, the point of the knife is apt to fall on the bulbous portion of the urethra, or divide to one side of it the artery of the bulb. The late Mr. Key used to affirm, that the artery of the bulb was generally divided in the lateral operation; but this was undoubtedly an erroneous impression. It takes its origin too high up from the pudic to run any danger, unless some variety in its origin exist. From its deep position, and the readiness with which it retracts within its sheath, the surgeon may experience much difficulty in taking it up.

By prolonging the incision too far downwards, that is to say, carrying it much beyond the level of the tuber ischii, the superficial branches which the internal pudic sends to the margin of the anus are almost sure to be divided; but here again the superficial situation of the vessels, which are not usually large, enables the operator to secure them without difficulty.

The trunk of the pudic artery itself may be divided when the incision is lateralized too much, and its lower angle made to terminate very close to the ramus of the ischium. This accident has happened in the hands of the very best surgeons; yet I cannot help thinking with M. Blandin, and many other anatomists, that it is impossible for it to occur, unless there be some irregularity which disturbs the normal relation of parts at the floor of the pelvis. The trunk of the internal pudic artery is closely bound down to the ramus of the ischium by a layer of dense fascia, and is nearly an inch and a half from the margin of the anus; nor does it begin to detach itself from the bone until near its terminal division. Under ordinary circumstances, then, I am of opinion that the trunk of the internal pudic cannot be wounded during the lateral operation.

The accident, however, has occurred, and to the masters of our art. Deschamps relates how Desault cut the internal pudic with Hawkins' gorget. The same misadventure has happened to M. Roux, to Dr. Physick, in America, to Sir Charles Bell, Sir E. Home, and others, in this country, and twice to Klein in Germany. Finally, the superficial artery of the perineum may be implicated, because, in some subjects, it is near to the median line; but the artery can be taken up without difficulty in this situation.

Having thus pointed out the various sources of primary hemorrhage which depend on errors in the mode of making our incisions, I must explain to you the more frequent ones connected with the abnormal origin or course of the arteries of the perineum. This cause of primary hemorrhage was alluded to in a general manner by Deschamps; but it is only since the works of Barclay and Harrison, Meckel, Tiedeman, and Quain, appeared, that we have been able to follow it up in a clear and satisfactory manner. The trunk of the internal pudic artery, as I have told you, is closely bound down by fascia against the ascending ramus of the ischium, and thus lies more than half an inch out of the way of the knife in the lateral operation. In some cases, the trunk of the vessel is not so closely applied on the bone, but begins to ascend towards the medial line almost as soon as it leaves the level of the tuberosity. Here the danger of dividing it is great in proportion to the lateral direction of the incision on the one hand, and the median inclination of the artery on the other.

Mr. Coote, of Bartholomew's Hospital, has recorded a very remarkable example of this deviation; as soon as the internal pudic had re-entered the pelvis, it passed over to the rectum, and ascended along it towards the triangular ligament, where it divided into its three terminal branches, one to the bulb, the other to the corpus cavernosum, and the third to the dorsum of the penis. Mr. Coote remarks, that the pudic artery would have been unavoidably divided in this case, had lithotomy been performed.

The inferior hemorrhoidal artery is usually detached from the trunk of the internal pudic about the level of the posterior margin of the anus, but it often arises much higher up, sometimes close to the edge of the transverse muscle, and there crosses the perineum obliquely downwards and inwards. In such case its division must be inevitable, and the surgeon should be prepared for the accident, lest the unexpected occurrence of hemorrhage at an early stage disconcert him.

The transverse artery of the perineum is occasionally double, and if the two branches were divided, the bleeding would of course be more copious than if a single vessel only existed.

The artery of the bulb is subject to numerous varieties of much importance in connection with lithotomy. This artery sometimes arises much lower down than usual, and crosses the perineum obliquely upwards in the way of the lateral incision. A good specimen of this variety is preserved in the Museum of St. Bartholomew's Hospital.

In some cases, the artery is either very small, or altogether absent; in others, it arises from the obturator artery. The course of the vessel is also liable to variety, for it has been found passing backwards towards the rectum, or running immediately above the lower margin of the triangular ligament to join the bulb. Sometimes the artery of the bulb of one side furnishes that of the opposite, and then it is very large; in such a case, if the single trunk happened to be on the left side, its division would inevitably be attended with great hemorrhage.

The pudic artery is said to be sometimes wanting, and its place supplied by a vessel which Mr. Quain has denominated the accessory pudic; but it would be more correct to say that in some cases the internal pudic never leaves the cavity of the pelvis, but descends along the postero-inferior surface of the bladder to the prostate, which it either penetrates or winds round, to be distributed to the penis.

Hence the artery is very much exposed during division of the prostate; and the same accident may be the consequence of varieties in the course of the dorsal artery of the penis. These latter are much more frequent than is commonly supposed. Indeed, the dorsal artery so often arises from the obturator or some other branch of the hypogastric, and passes forwards under the symphysis pubis to the dorsum penis, that the older anatomists, and even Winslow, mistook this for the regular distribution. In many other cases, however, the dorsal artery, instead of coming out with the vein under the symphysis pubis, gains the side of the prostate, round which it winds to the dorsum penis. The late Mr. Shaw, of the Middlesex Hospital, lost a patient from the division of this anomalous branch while incising the prostate; and Professor Harrison, of Dublin, justly remarks that it may account for many other cases of fatal bleeding during this stage of the operation.

We are totally unacquainted with the causes which produce these curious varieties in the arterial system, but I may remark, that the dorsal artery of the

penis, when anomalous in origin, has a strange tendency to attach itself to the obturator artery. Dr. Hume has recorded a case where the obturator arose from the epigastric, and gave off the dorsal artery in such a way that whether the patient had been operated on for hernia or for stone, he must have been exposed to hemorrhage. In one other remarkable case, where the obturator arose from the femoral just below Poupart's ligament, it furnished the dorsal artery of the penis. The preparation is, I believe, in the Museum of the University of Cambridge.

In a few rare cases, the dorsal artery of the penis has been found taking its origin as a distinct vessel from the external iliac, or from some branch of the hypogastric artery. The vessel may, in such cases, cross the surface of the prostate to gain the crus penis, and thus be exposed to injury.

From what I have now said, you may perceive that primary hemorrhage may occur during the external or internal incisions. In the latter case, the danger is proportionate to the extent of the incision through the prostate: in the former case, to the amount of its deviation from the median line.

Venous hemorrhage is another accident of lithotomy which occasionally occurs, although its possibility is denied by several authors. It is sometimes supposed to arise from division of some portion of the bulb, an accident not easily avoided when we have to operate on old patients. The bleeding from this source, however, is easily commanded and seldom profuse. A more serious form occurs from division of the venous plexus about the neck of the bladder and prostate. In aged patients, and after long-continued irritation of the urinary organs, these veins are apt to become abnormally developed, even to a varicose state. Besides this, they are enveloped in prolongations of the deep pelvic fascia, and thus prevented from retracting or becoming quickly closed after division. From these causes, troublesome venous hemorrhage may come on in old patients submitted to the operation. Sir B. Brodie lost a patient within a few hours from this cause, having been foiled in all his efforts to restrain the bleeding. It may take place in adults, or even in children, under peculiar circumstances. M. Robert witnessed two examples at the Hotel Dieu of Paris. In one case, that of a young man, the venous plexus continued to pour forth blood until death ensued. No artery had been wounded. The second case was that of a child addicted to masturbation. The enlarged veins furnished a copious bleeding, which became suddenly fatal after an act of that vice. These are altogether exceptional cases, for we may lay it down as a rule that the danger of venous hemorrhage is in direct proportion to the age of the patient.

The period at which secondary hemorrhage sets in is very uncertain. It may be in some sort a continuation of the primary hemorrhage, that is to say, some of the divided vessels may continue to pour out blood in small quantities. In other cases, it arises from some of the smaller arteries, which did not bleed when first divided. Hence, you should make it an invariable rule to examine the patient's linen every day for any traces of blood, more especially if the pulse become feeble and the face pale. Secondary hemorrhage, however, usually commences about the fifth or sixth day—sometimes earlier, on the third or fourth—sometimes later, on the eighth or tenth day.

[Infiltration of urine into the cellular tissue is one of the most frequent causes of death. To understand completely the manner in which this may take place, we should bear in mind the arrangement of the different pelvic fasciæ.]

Infiltration of urine may take place under two different circumstances. It may occur whenever the internal incision is carried beyond the limits of the prostate, or when the neck of the bladder and prostate are injured and lacerated during the efforts made to extract a large calculus. In both these cases, the fibrous capsule of the prostate is divided or lacerated; the urine becomes infiltrated into the subjacent cellular tissue, inflammation sets in, and, according to its seat or extent, excites peritonitis or gives rise to sloughing and gangrene of the soft parts within the pelvis.

Infiltration, again, may occur, not from a too free internal incision, but because the external one has not been made on the same plane as the internal; because it has been too small, or the soft parts which constitute its walls have been lacerated and rendered irregular during the extraction of the stone; anything, in a word, which impedes the free discharge of urine through the external wound, may become

an occasional cause of this infiltration, which takes place in the perineum, and not in the sub-peritoneal cellular tissue as in the former species. Simple inflammation of the pelvic cellular tissue, not caused by urinous infiltration, is, I believe, a very rare accident.

The distinction which I have just drawn between infiltration of urine into the cellular tissue near the neck of the bladder, and infiltration into the cellular tissue about the rectum, &c., may, in some measure, explain the difference of symptoms observed in different cases, and the greater rapidity with which some hasten to their fatal termination. You can readily understand, that when such an irritating fluid as the urine comes in contact with the cellular tissue close to, or immediately underneath the peritoneum, the latter membrane may be rapidly involved in the inflammation, and death speedily follow. On the other hand, the effects of infiltration into the more superficial parts of the wound are usually slower, but it gradually extends over a larger surface, causing sloughing, abscesses, gangrene, and the worst kinds of inflammation, which is almost as destructive as that involving the peritoneum.

The symptoms of urinary infiltration are extremely various, for the effects of the accident are modified by several circumstances. In some cases, the symptoms set in a few hours after the operation, and terminate fatally in a few hours more, or within a day or two; in other cases, the progress of the disease is slower, and the patient does not sink until after a considerable period.

The sub-peritoneal is, as might naturally be expected, the most rapid and dangerous. The patient complains of pain about the neck of the bladder, and from the very outset has a peculiarly unfavourable and anxious expression of countenance; the pulse is small, weak, and rapid; the tongue soon gets dry; and the lower part of the abdomen tumid and painful; often there is vomiting; prostration now rapidly ensues; there is low delirium, and the patient dies within forty-eight hours.

In other cases the typhoid symptoms and prostration are not so great; the fever at first is of a more irritative character, and is occasionally interrupted by rigors; still, as the urine continues to work its way between the layers of the fascia, and the inflammation ascends along the sides of the rectum, more unfavourable symptoms do not fail to present themselves: the skin becomes hot, the tongue very brown, the intellectual faculties confused, diarrhœa and vomiting supervene, and the patient either sinks in a state of prostration, or is cut off by the addition of peritonitis to his other maladies.

[Purulent infection is not often a cause of death in English surgery. Inflammation of the bladder is somewhat common; but we should estimate the inflammation caused by the stone, and that also of the operation. In alluding to the last cause of death after lithotomy, Mr. Gay, in his concluding remarks, says, that calculus vesicæ can never long exist without producing deterioration of the system and latent disease of the kidneys, and with such cases as these, he observes, lithotritists are very careful not to meddle.]—*Lancet, Dec.* 4, 1852, *p.* 507.

70.—*Mr. Hutchinson's Air-Compressor of the Testicle.*—[The ordinary mode of maintaining pressure of the testicles by means of strips of plaster has its disadvantages. If it is awkwardly applied it causes great pain, and the necessity of the frequent re-application makes it troublesome and annoying.]

To obviate these objections, an apparatus has been contrived by Mr. Hutchinson, which consists of a double bag (on the principle of the double nightcap) with the cavity of which a tube communicates. The whole is constructed of air-tight material, and to the end of the tube, which is long and flexible, a small screw-cock is affixed. The enlarged testicle having been put into the involuted bag, the latter is kept in place by means of a riband tightly tied round the cord. Air is then blown through the tube into the cavity of the bag, and compression of the enclosed gland is effected, just as would be the case with the lung if air were forced into the pleural sac. When filled as full as the patient can comfortably bear, the screw-cock is closed, and the air retained. As soon as by diminution in the size of the testicle the tension has become much lessened, a little more air

may, without any necessity for changing the apparatus, be blown in, and thus a condition of constant and equable compression is sustained. With regard to putting on the bag, no more difficulty is found in insulating the affected organ than is the case in applying strapping. The support afforded is very comfortable, and the inflamed part being protected on all sides from friction, blows, &c., by a cushion of air, the patient can walk about, or follow his usual avocations. It must, however, be admitted, that the bulk is considerably greater than that of a merely strapped gland. Its chief disadvantages, as far as it has yet been tried, appear to be, that, from being made of non-permeable material, it entirely confines the cutaneous exhalations of the part, and also that the skin beneath the constricted neck is a little liable to excoriate. For the sake of cleanliness, therefore, the bag should be removed, and the skin washed once a day; if necessary, the latter may be smeared with oil, or protected by a layer of oiled silk. If the case be suitable, a piece of lint, smeared with mercurial ointment, may be wrapped round the testicle and the bag applied over it. The cases in which Mr. Hutchinson has proposed to use his invention are chronic and subacute inflammation of the gland, varicocele, some peculiar forms of hydrocele, after paracentesis, and possibly malignant affections.—*Med. Times and Gazette, Feb.* 26, 1853, *p.* 218.

71.—VARICOCELE TREATED BY THE NEEDLES AND TWISTED SUTURES.

(Under the care of Messrs. Coulson, Fergusson, and Partridge.)

[In considering whether the palliative or curative treatment should be pursued in cases of varicocele, the surgeon must consider the station, life, and occupation of the patient, and the temperament and state of health. If his occupation does not require him to make violent exertion, the palliative treatment must be adopted; and no attempt at curative treatment must be made if the health is not perfectly sound, as even in the most favourable cases fatal results have followed operations upon the veins.]

When the veins of the spermatic cord are in a varicose state, the choice between the palliative or curative treatment is likewise of great importance to the patient; and there can be no doubt but that in the slighter cases a suspensory bandage is preferable to an operation. In fact, the latter treatment should not be thought of, except there be constant pain, (unrelieved by artificial support,) much inconvenience respecting trade or occupation, or impending mischief to the testicle. When the curative treatment seems advisable, it remains for the surgeon to choose among the various modes of operating which have been proposed and extolled by their authors. First, there is the actual cautery applied by a heated wire; then the caustic, as lately applied in an ingenious manner by M. Bonnet, of Lyons. The operation, as described in the Foreign Department of 'The Lancet,' vol. ii. 1852, p. 244, is performed as follows:—

"The operator, when the patient is insensible with chloroform, seizes the cord with the four fingers of each hand, and tries to find the vas deferens; as soon as he feels that duct, he allows it to glide back from the veins, and keeps the latter fixed by his fingers. One hand is then made to rest on the inguinal ring, and the other on the testicle, and an assistant is then desired to apply a peculiar kind of forceps on the veins which lie between the operator's hands. This forceps is supplied with two little rods, which produce the same compression as the hands when the latter are taken off, and likewise keep the vas deferens at the back of the veins. When the forceps is properly fixed, a transverse incision is to be made across the veins, about an inch and a half in length, and the soft parts are divided until the veins come into view, the operator taking care not to wound the latter. It is important that all the bleeding vessels, even the smallest, should be immediately tied: three or four ligatures are generally necessary. The whole wound is then covered with paste of chloride of zinc, which is allowed to stay for twenty-four hours. The paste is taken off on the next day, and the layer of cauterized parts is removed with the bistoury, their thickness being generally about the one-third of an inch; and the forceps are then also to be loosened, so that the pressure be

not exercised too long. A fresh layer of chloride of zinc paste is put on the spot whence the eschar has been removed, and is again allowed to remain for twenty-four hours. At the expiration of this time the forceps is removed, and this concludes the operation. Eight or nine days afterwards, a white eschar, about an inch square, falls off, and this is found to contain the whole of the veins. The latter may easily be known by the dark blood filling the tortuous convolutions. The pain is very severe for the first two or three days, and there is indeed much suffering until the eschar finally falls off. The scrotum and testicles generally become œdematous and inflamed, but the excitement ceases immediately the cauterized parts are detached. The fever and œdema are mostly trifling; no venesection or any other antiphlogistic means are ever required; as soon as the eschar falls off, the patient is as well as if he had not undergone any operation. He generally may leave his bed a fortnight after the cauterization, and the whole treatment does not last more than one month."

The veins may also be obliterated by being gradually rolled upon a silver wire, the two ends of which, by being twisted, at last accomplish the obliteration of the vessels. This method has been proposed by M. Vidal, of Paris. M. Ancelon, of Dieuze, France, finds fault both with M. Bonnet's cauterization and M. Vidal's rolling of veins. He prefers, and we think with justice, making an incision over the veins without wounding them, and then (without any danger of being mistaken) separating them from the vas deferens and artery. He also deprecates M. Bonnet's repeated applications of chloride of zinc paste, and advises, when the veins have been laid bare, to keep away the vas deferens and artery by interposing a piece of card folded in the shape of a groove, and then applying caustic paste of the thickness of two lines, which should be left for ten minutes and then taken off. Pain, time, and risk of doing harm to the surrounding textures are thus saved. He operated thus upon a young man of twenty-two years, and in about twelve days the wound was healed, and the patient doing well.

Various other modes of operating have from time to time been used, as Mr. Wormald's ring, M. Ricord's twisting by means of a cord and metal bow, &c.; and, lastly, the transfixion of the veins by needles, and the twisted suture applied over them, as usually done for ordinary varicose veins of the leg. This method seems to have gained ground with us, for several hospital-surgeons have lately adopted it; and we shall now devote a few lines to the cases which have come under our cognizance. Among these we find one lately under the care of Mr. Coulson, the details of which run as follows:—

Samuel M——, aged thirty-five years, was admitted Jan. 14, 1853, under the care of Mr. Coulson. The patient's health had generally been good, but for the last fifteen years he had noticed an enlargement of the veins of the cord. He had also suffered from stricture, for which ailment he had been successfully treated by Mr. Coulson in this hospital one year before the present admission.

On examination, a considerable enlargement of the veins of the cord on the left side was observed; the vessels were partially surrounding the testicle, and this organ was painful to the touch, and appeared rather smaller than its fellow. Mr. Coulson, considering this a fit case for operation, proceeded, on the 15th of January, to tie the veins of the cord.

After having carefully separated the varicose vessels from the vas deferens and the artery, he passed three hare-lip needles under the congeries of vessels, at a distance of about half an inch from each other, and the intervening portions were then strangulated by the twisted ligature. The operation was performed without chloroform, and the patient did not complain of much pain.

No constitutional symptoms followed, but some inflammation of the epididymis came on, which symptom was relieved by poulticing and fomentations. The ligatures came away on the twentieth day after the operation, the wound rapidly healed, and the patient was discharged a few days afterwards in good condition.

[Charles B., suffering from varicocele of six years' duration, was admitted into King's College Hospital, under Mr. Fergusson. Various palliative measures had been resorted to—as suspensory bandages, and the removal of a portion of the scrotum; but the disease returned on his returning to business.]

Mr. Fergusson performed the usual operation for varicocele, by passing needles

under the veins, and then twisting some silk over them just as is done for hare-lip. The operation succeeded, and the patient went out much relieved.

He however returned in November 27, 1851, as the veins had enlarged again; and four days afterwards Mr. Fergusson used the needles and twisted suture a second time. The patient now complained of some pain up the cord, and slept badly: fomentations gave relief, and on the second day he was much better. On the tenth there was little pain and discharge, and the dragging sensation was gone. On the twentieth day after the operation the ligatures came away, and the veins were very much diminished; there was for a little time some dragging sensation about the testicle, but the patient was discharged much relieved about one month after admission.

[James Q——, aged twenty-two, admitted under Mr. Partridge for varicocele of the left side of the scrotum. The disease had existed 3 years.]

On the day of admission, Mr. Partridge operated for the obliteration of the veins, by pinching up a piece of skin containing the diseased vessels, and passing two needles behind them; he then twisted a figure of eight suture around each needle, sufficiently tight to stop the circulation. The ends of the needles were cut off, and a piece of lint wrapped around each to protect the scrotum from injury. The patient was ordered to keep his bed, and the scrotum to be supported by a pillow.

On the third day after the operation, a slight effusion had taken place into the scrotum; to this cold water was applied.

On the sixth day, ulceration began to show itself, the needles were removed, and the sutures left; the effusion had considerably diminished.

On the eleventh day, the twisted sutures came off spontaneously by the effect of the ulcerating process; and on the twenty-first day after the operation, the wound was quite healed, the patient was ordered to wear a suspensory bandage, and was discharged.

It is curious to observe, that both in Mr. Coulson's and Mr. Fergusson's cases, the ligature came away exactly on the twentieth day. Nor should it be passed unnoticed, that the three foregoing cases afford a good illustration of the well-known fact, that the left side is more prone to suffer from varicocele than the right.—*Lancet, March* 12, 1853, *p.* 246.

DISEASES OF THE SKIN.

72.—ON A NEW CAUSTIC IN MALIGNANT ULCERATIONS OF THE FACE.

M. E. Cazenave, of Pau, relates in 'L'Union Médicale' for 22nd Jan., two cases of malignant ulceration of the face, in which he has sucessfully employed a local application, made from sulphuric acid and powdered saffron. The remedy is formed by pouring the acid on the saffron, and applying it in the form of a soft paste. Its corrosive action is immediately manifested on the diseased tissues; the paste dries, and falls off in two or three days, in the form of black crusts, which carry with them the eschar. The application is made several times; the wound assumes a healthy red tint, and cicatrization takes place. In one case, a year has elapsed, in the other, two years; and the disease has not returned.

The efficacy of this treatment is evidently dependent on the sulphuric acid; which, we believe, would succeed equally as well if made into a paste with common flour, or any ligneous powder, as with saffron. A paste of sulphuric acid and flour would be worth trying in obstinate cases of phagedenic ulceration.—*Association Med. Journal, Jan.* 28, 1853, *p.* 91.

73.—*Collodion and Castor Oil in Erysipelas.*—M. Guersant has employed with advantage, in a severe case of erysipelas, an application to the skin, consisting of collodion combined with castor-oil. The formula was—collodion, 30 parts; castor-oil, 2 parts, mix. This varnish was applied once on each three successive days to the parts attacked,—and with good effect, as it caused cessation of the burning pain and the disappearance of the redness. The idea of mixing collodion

with castor-oil is due to M. Robert Latour.—*Journal de Méd.; Med. Times and Gazette, Nov.* 27, 1852, *p.* 549.

74.—ON THE EXTERNAL APPLICATION OF THE TINCTURE OF IODINE IN ERYSIPELAS.

By Hugh Norris, Esq., late President of the Royal Medical Society of Edinburgh, &c.

[Mr. Norris, during the last four years, has had extensive experience in the treatment of erysipelas by the tincture of iodine, and he says that]

The results have led me to form the following conclusions:—

1. That the local application of the tincture of iodine over the whole affected part appears to exercise a specific control over erysipelas.

2. That (as might *à priori* have been expected) the earlier the remedy is applied, the more rapidly are its good effects manifested.

3. That it should be repeated as often as the surface becomes pale from the vaporization of iodine, notwithstanding the somewhat severe smarting which oft-times immediately ensues.

4. That it never acts, as nitrate of silver sometimes does, in at once preventing the spread of the disease beyond the limits of its application (by circumvention as it were), but that locally, it merely produces a rapid absorption of the exudation in the subjacent areolar tissue.

5. That it appears, *cæteris paribus*, to be equally beneficial in the sthenic and asthenic forms of the complaint.

6. That its effects apparently are not merely local; for, in every severe case in which I have used it, it has exhibited a marked control over the constitutional symptoms, the constitutional amendment generally appearing to coincide with the local improvement,—although, in several instances, while the external inflammation was spreading (the force of the disease, so to speak, having been broken), the internal improvement has sensibly manifested itself, the pulse becoming softer and less frequent, the tongue cleaner and moister, and the previous distress invariably more tolerable.

In this manner I have every reason to believe the disease may be frequently cut short in its course.

Of the history of this remedy I know less than of its value. I learned its usefulness from my friend Mr. W. Walter, of Stoke, near Yeovil, a former pupil of Mr. Morgan, Surgeon to the Bristol Royal Infirmary.

The latter gentleman kindly informs me that his notice was first directed to it by a pamphlet published some years since by Dr. Davies, of Hertford, "On the Use of Iodine Locally Applied." Since that time "experience the most ample and satisfactory," both in public and private, has confirmed his good opinion of this remedy for erysipelas, more especially in that form which attacks the head and face, whether traumatic or idiopathic.—*Med. Times and Gazette, Dec.* 11, 1852, *p.* 590.

75.—ON THE TREATMENT OF ERYSIPELAS BY IRON.

By Dr. George W. Balfour, Cramond.

[Dr. Balfour was first induced to try the iron treatment in erysipelas, from Dr. Charles Bell's assurance of its great and unfailing success. Since that time he has treated upwards of 20 cases in the same way, and has had no reason to regret doing so. He believes it to be a certain and unfailing remedy for all the varieties of erysipelas.]

The first case so treated was a highly scrofulous woman, with erysipelas of the scalp, arising from irritation of two large sores on it. She was cured in three days. The second was a man with erysipelas of the foot and ankle, cured in two days. The third was a case of traumatic erysipelas of the scalp in a woman; she was ill for a day or two before being seen, but was cured in about five days' treatment. The wound, a deep cut about three inches long, was healed within a week. In short, all the cases, many of them very severe, and accompanied with high deli-

rium, some of them phlegmonous, others vesicular, and several occurring in children, were cured in less than a week on the average. Suppuration took place in none but two, in both of whom the treatment was not commenced till after effusion had taken place. Their convalescence was, of course, more tedious. The ninth day was that on which convalescence commenced even in the most severe cases, and *probably* the course of the disease would have been shorter even in them had the medicine been given more regularly; for so sure is it in its effects, that I can, with I may almost say absolute certainty, predict the state of the patient on ascertaining the quantity of the drug taken, and a glance at the bottle is fully as informing as to the state of the disease, as a look at the affected parts themselves.

The tincture of the muriate, is that preparation of iron I have hitherto employed, the dose varying with the age of the patient; the great object being to saturate the system with iron as speedily as possible, and to keep it so till the disease is abated. A few doses suffice to remove the pain, and lessen the heart's action; it acts also as a diuretic, and to some extent corrects the secretions, often cleaning the tongue as well as any purgative. It never produced headache nor other unpleasant symptom, and was continued with advantage throughout the highest delirium. The only other remedy employed was an occasional purgative, and the local application sometimes of a warm poultice, and at others of simple flour or starch powder and cotton wadding, the poultice being preferred, perhaps without much reason, when the situation or extent of the part affected did not throw difficulties in the way of its application.

Its principal curative action seems, as Mr. G. Hamilton Bell supposes, to be exerted on the capillary vessels; and for this reason, that while its diuretic action is equally well maintained by smaller doses, less frequently repeated, its curative action is not obtained unless the system be saturated with it, and kept so for some time. Further, without denying that it may act as a renal purgative in disease, I may add that, from some experiments on myself, it does not seem to do so in health. The quantity of the urine was much increased by fully a half, yet the quantity of urea was increased relatively and absolutely only to so small an amount (a grain or two in twenty-four hours), as to be far within the usual limits of aberration, and much too insignificant, supposing it to be real, to account for the wonderful curative agency of the drug. On taking twenty minims of the tincture every two hours, the second and third doses produced some slight degree of tension in the head, a symptom which subsequently ceased and did not return. At this period, too, the pulse was slightly accelerated, possibly from nervousness; it afterwards came down from 80, my usual average, to 64. The iron was taken at intervals for four days, regularly every two hours for the last twelve hours. Its diuretic action was always established within an hour after taking each dose: no iron could be detected in the urine, nor in the serum of the blood; but as this may depend on my want of refinement in chemistry, I am willing to give any chemist, who may be anxious, another opportunity by repeating the experiment; for I know no method of treating any disease more worthy of investigation, and none more deserving of adoption by the profession than the treatment of erysipelas with iron. Some have supposed its efficacy to be owing to its *stimulant* action: that this is not the case was well shown in a case I had recently under my care,—a young man labouring under scarlatina, who had a patch of erysipelas vesicular over the sacrum, and one over the right armpit. Neither of these was at all influenced by the carbonate of ammonia, employed in the treatment of the co-existing scarlatina, but yielded at once to twenty-four hours' treatment with the muriate of iron. —*Monthly Journal of Med. Science, May*, 1853, *p.* 428.

76.—TREATMENT OF ULCERS OF THE LEG.

[The facilitation of the flow of blood towards the heart is the great object to be attained in treating ulcers of the leg. Many methods have been proposed whereby to effect this. That employed in the Middlesex hospital, is the most easy and rational; the limb being raised high above the level of the body on an inclined plane. By such a plan ulcers commonly heal rapidly.]

In a very large majority of cases of ulcer of the leg, however, such treatment is inapplicable, on account of the patients being obliged to continue up and about their ordinary avocations. Means, therefore, by which the end may be accomplished without restriction to bed are the most important, because most generally available. Among the out-patients at the London Hospital the plan of strapping the whole leg from the toes to the knee with inch-wide strips of plaster, and then applying over them a bandage as tight as can conveniently be borne, is carried out on a large scale, and with very great success. The additional expense and trouble involved in this plan appear to be much more than counterbalanced by the comparative speediness of the cure. Its certainty is so great, that Mr. Critchett informs us, that he is commonly able to state beforehand the time which any given sore will require to heal, and that failures almost never occur.*

Of the common plan of bandaging the leg we need say nothing here, as it is in almost universal employment. We must not, however, omit allusion to some methods frequently adopted in cases in which the superficial veins are much diseased, and which are especially intended to afford support to those vessels. Many of our readers will be familiar with the fact, that those who suffer from this disease, despite the alleged evil influence of local constriction, derive great benefit from regularly wearing strong elastic garters. At St. Bartholomew's, Mr. Wormald is accustomed to direct the application of a folded compress of lint over the trunk of the internal saphena, immediately below the knee, to be fixed with considerable tightness by means of a broad strip of sticking plaster. An artificial valve is thus constructed, and the superincumbent column of blood supported. The same object is gained yet more effectually by Mr. Startin's elastic spiral bandage, in frequent use at the Hospital for Diseases of the Skin. This bandage consists of a strip of vulcanised India rubber, half an inch broad and three yards long, terminating at one end in a large loop, and at the other by strings of tape. The loop is passed over the instep of the foot, and the bandage is then carried spirally round and round the leg as far as the knee, where it is fixed by means of the strings. The space allowed to intervene between the convolutions is usually from an inch to two inches, and the degree of tightness with which the bandage is applied varies, of course, according to the case. By its assistance, *elastic* support is afforded to the dilated vein at *many* parts of its course. The facilities which it affords for the dressing of the sore itself constitute one great recommendation, since there is no need to remove the bandage, but merely to stretch two of its coils and place beneath them the lint, &c., which is thus aptly retained in its place. In some cases of peculiarly irritable skin, it is, however, more convenient to apply a common calico roller lightly first, and the elastic band over it, or the latter may be put outside the patient's stocking.

The radical cure of varicose veins by obliteration is very commonly practised in some of the hospitals. We observe that Mr. Solly, and also Mr. Skey, usually employ for that purpose the potassa fusa so applied over the dilated trunk as to produce a small eschar. The only inconvenience which we have ever seen to result from it, has been the production of larger sloughs, and more extended inflammation than was wished for. Mr. Lloyd, Mr. Simon, and Mr. Lee, at the hospitals to which they are respectively attached, frequently practise the operation of passing the needle behind the trunk of the vein, and then twisting a ligature tightly over its projecting ends, so as to constrict the vessel, and induce its ultimate obliteration. By this method, the reputed risk of phlebitis, as a consequence of the ligature of veins, is said to be avoided.

However constant the influence which the dependent position of the leg exerts, in inducing and keeping up sores on that part, it is yet very important to bear in mind that such ulcerations are essentially inflammatory, and, to an extent varying with different cases, amenable to the treatment of chronic inflammation. In proof of this, we might instance a very favourite plan of medication with some surgeons, by means of small doses of opium, or of opium combined with minute

* For a valuable practical exposition of the details of this method of treatment, we must refer our readers to Mr. Critchett's work on the subject. It is very important that the plaster used should be of an unirritating character, and that it should be spread on unglazed calico. That employed at the London Hospital is made with the emplastrum plumbi, and appears admirably suited for the purpose.

quantities of calomel: many of the ointments, lotions, and other applications in common use, from their discutient properties, afford additional evidence in the same direction. The employment of blisters is also another circumstance in support of the doctrine, and one respecting which we must here say a few words. Blisters may be applied usefully over the ulcerated *surface* of indolent sores, in order to arouse a new action—on the thickened *edges* of indolent sores, to remove the superficial layers, and to increase the vascularity of the indurated structure below; and, lastly, they may be applied at some *distance from the ulcer*, with view to simple derivative action. We remember watching a case, in which, under Mr. Lloyd's direction, a large blister had been applied to the calf of an old woman, to promote the healing of a very irritable and painful ulcer, just above the ankle. The latter cicatrized with wonderful rapidity, and was well almost before that occasioned by the blister. The best mode of vesicating the edges of ulcers, is by the application of a blistering fluid, of which that prepared by Bulleyn is the one which we commonly see used. But by far the most conclusive evidence as to the inflammatory character of these ulcers which we could give, is derived from the results of the practice pursued at the Hospital for Diseases of the Skin, where, in most cases not complicated with extensively diseased veins, it is customary to put the patient under a continued course of the iodide of potassium, or biniodide of mercury; and at the same time, to apply to the diseased surface itself, the following ointment:—

R. Hydr. bisulphuret. hydrarg. nitrico-oxyd. aa. ʒss; creasoti ♏xx; adipis recentis ʒxvi. Misce.

We have been quite astonished, in watching the ease with which many very extensive and severe ulcers have succumbed to these measures, whilst no further attention was being paid to the support of the part than by directing the patient to apply every morning a common calico roller made moist by immersion in hot water. It must be stated, however, that in very many of the cases at this hospital, the disease is conjoined with eruptions on the leg, as eczema impetigo, or ecthyma, upon which it often appears to depend. In this class of ulcers the above plan of treatment is, as will be seen, equally adapted for the removal both of cause and effect.—*Med. Times and Gazette, April* 16, 1853, *p.* 398.

77.—OBSTINATE ULCER OF THE LEG—NEW MODE OF INDUCING CICATRIZATION.

Under the care of JOHN GAY, Esq., at the Royal Free Hospital.

[When, by favourable cicatrization, the size of a large ulcer of the leg has been considerably reduced, the sore sometimes remains particularly obstinate. A case of this kind is recorded by Mr. Gay. The ulcer had remained the size of a shilling, and all means to produce cicatrization had failed, during the long period of twenty years. On examination, Mr. Gay found the healthy skin on each side of the cicatrix was in a state of great tension, and to relieve this, he determined to try the effect of an incision through the skin, where the tension existed in the greatest degree.]

On March 10th this was accordingly done. A longitudinal incision, about three inches long, and deep enough to include the fascia, was made on the inner side of the leg, two inches from the border of the cicatrix.

It was noticed, after the lapse of a few days, that, as if to confirm the propriety of the measure, the new wound gaped most at the part exactly opposite to the unhealed sore, and that the latter had already diminished in size.

April 1.—(Three weeks after the performance of the incision.) The original ulcer is now quite closed by a very sound-looking scar, and of the wound made by the knife there remains unhealed only a mere line of very healthy granulations, which will probably be skinned over in the course of a few days. It is remarkable that the healing of the latter has been partly by the formation of new cuticle, and partly by the approximation of its edges. A stage of contraction will soon, no doubt, ensue in this cicatrix, but as the traction exercised by it in so doing will be transferred to the back of the leg, where the skin is loose, it may fairly be hoped

that the scar of the ulcer will escape injury. Mr. Gay observes that it is only by thus altering the direction of traction, and transferring it to more healthy and moveable parts, that any advantage can be expected from measures similar to the above. If the conditions under which the artificial sore is placed were precisely similar to those of the original one, it would then share with the latter in the improbability of the accomplishment of cicatrization. But they are not. The incision is made at some distance from the diseased surface, and in healthy parts, yet unstretched, and easily permitting considerable yielding.—*Med. Times and Gazette, April* 16, 1853, *p.* 398.

78.—*Unexpected Effects of the Employment of Carbonate of Magnesia in the Case of Warts.* By Dr. Lambert de Hagueneau.—A stout girl, whose hands were covered with warts, consulted Dr. Lambert for gastralgia, and was ordered to take carbonate of magnesia. At the end of two months the gastralgia remained unaltered, but the warts had disappeared. M. Lambert administered the same medicine to a young lady, in the dose of a tea-spoonful night and morning, for a similar affection. After fifteen days of the use of the powdered magnesia, the warts became flattened and smaller; they dried up, split and fell off in fragments, and at the end of five weeks had disappeared without leaving a trace.—*La Presse Médicale*, Bruxelles, Sept. 26, 1852—*Med. Times and Gazette, Jan.* 8, 1853, *p.* 45.

79.—*Treatment of Acne and Boils.*—We have classed these diseases together because they appear to depend very frequently on similar states of the constitution, and are also amenable, for the most part, to similar plans of treatment. The great degree of success which we have observed to accrue from that pursued at the Hospital for Diseases of the Skin, makes us desirous of attracting to it the attention of the profession. It consists, essentially, in the combination of ferruginous salts with saline aperients. In the common forms of acne, as acne simplex and punctata, Mr. Startin usually prescribes ferri sulphat. gr. ij., magnes. sulph. ℥i., ter die sumend.; ordering also a small portion of an ointment, containing the ammonio-chloride of mercury, gr. x. ad ℥j., to be applied to each pimple every night. The acne indurata is characterised by much more of inflammatory condensation of tissue, for the removal of which it is usually necessary to excite the absorbents to increased action, and the iodide of iron, in doses of gr. iij., three times daily, appears to be its most efficient remedy. All who have attentively watched the phenomena attendant on the furunculous epidemic which has been so rife of late years, will be aware that its outbreak in individuals has been very frequently preceded by headache, giddiness, lassitude, dyspepsia, and other evidences of a disordered state of the circulating fluids. This granted, and we have at once a scientific basis on which to ground the requisite treatment. By the exhibition of full doses of iron, in combination with saline purgatives, the blood is at once depurated and renovated. The usual prescription at this hospital is mist. ferri acid. ℥iij. ter die, and under its use the improvement in the general health is often no less manifest than the rapid subsidence of the local disease. With greater care in regard to purgation, the same plan may be adopted in cases of small carbuncles.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 24.

80.—BALMS FOR DISEASES OF THE SKIN.

By M. Cazenave.

Baume Chiron ou de Lausanne, employed to promote the Cicatrisation of Chapped Nipples and Broken Chilblains.—Take of olive oil, ten ounces; Venice turpentine, two ounces; yellow wax, one ounce; alkanet root, half an ounce; boil together, strain and add of balsam of Peru, two and a half drachms; camphor, nine and a quarter grains; stir constantly until cold.

Balm for Chilblains.—Take of rectified spirit of turpentine, one drachm; sul-

phuric acid, fifteen grains; olive oil, two and a half drachms; mix. To be rubbed night and morning on unbroken chilblains.

Goulard's Balm (Oil of Saturn).—Take of essential oil of turpentine any quantity; heat it *secundum artem*; decant, &c. Used for dressing phagedenic ulcers, ecthyma, some chronic eczemas, and rupia.

Plenck's Mercurial Balm.—Take of mercury, one ounce; Venice turpentine, half an ounce; lard, three ounces; calomel, seventeen grains and three quarters; elemi ointment, three ounces: mix. Used for dressing venereal ulcers.—*Dublin Quarterly Journal, Feb.*, 1853, *p.* 256.

SYPHILITIC DISEASES.

81.—CASES OF SYPHILIS.

By JOHN GRANT, Esq., 79th Highlanders.

[In the Regimental Hospital of the 79th Highlanders, during the month of December, 1852, there were twelve cases of primary and one of secondary syphilis. In reporting these cases, Mr. Grant makes the following pertinent observations:]

The exhibition of mercury, in any form, for the treatment of primary syphilis has now been entirely abandoned, superficial sores readily healing under the local application of nitrate of silver, or sulphate of copper, with the ordinary lotions of acetate of lead and sulphate of zinc.

Chancres, with an indurated base, are treated with the daily application of solid lunar caustic, and where the surface is foul, or indisposed to heal, black wash is sometimes employed.

The practice of administering gray powder or blue-pill, for the purpose of expediting the resolution of bubos, and preventing the appearance of secondary symptoms, has been found so unsatisfactory, that for some time past I have ceased to employ any persistent efforts for the discussion of *suppurating* bubos; and, as soon as matter has formed, a poultice is applied, and the abscess opened with potassa fusa.

The dispersion of a bubo by the absorption of its contents into the system does not appear, *à priori*, to be a very desirable result, or one unattended with danger; and recent observation has led me to trace a great proportion of cases of secondary syphilis to subjects in whom bubos had been discussed.

It is not to be inferred, that every glandular enlargement in the groin is, on its first appearance, fomented and poulticed, with a view to promote suppuration; on the contrary, the discutient system is tried at the commencement, and this object is often attained by the application of poultices, and vesicating the surface by nitrate of silver or cantharides; but as soon as matter has formed, the usual means are employed to bring it to the surface, without further attempts to promote resolution.

In taking a view of all the cases of secondary syphilis treated during the year ending 31st December, the antecedents were generally discussed bubos, and that, out of all the admissions with syphilis primitiva in 1852, the only two instances of secondary symptoms occurred in persons who were salivated for the primary affection.

No doubt, the experience afforded by a single regiment is not very extensive; but should the comparative frequency of secondary syphilis, after the opening or dispersing of bubos, appear to be a question of any interest, the aggregate practice of military hospitals affords peculiar facilities for its elucidation.

No mercury has been administered of late for the cure of syphilis consecutiva; and it is proposed to treat cases occurring during the present year with sarsaparilla, iodide of potasium, &c.—*Monthly Journal of Medical Science, Feb.* 1853, p. 136.

82.—*On the Employment of Tannin in Gonorrhœa.* By DR. LANGE, Konigsberg, Prussia.—The author used the tannin pure in eight cases, with sulphate of zinc in two cases, as an injection (℥ss. to ℈ij. to ℥ij. water) in ten cases. The injection was used three or four times a day. The disease in the several cases had lasted from one to five weeks, and from four to six and nine months, &c. The ages of the patients varied from seventeen to forty-three years. They were cured in

from six to nine days. No pain followed the use of the injection.—*Med. Times and Gazette, April* 2, 1853, p. 355.

83.—*On the Treatment of Bubos.*—M. BONNAFONT (L'Union Médicale, 1852, No. 155) describes a plan of treating suppurating bubos, by which, he says, much time is saved, and unsightly scars are avoided. When the bubo is quite ripe, it is pierced in its most tense part, and in the direction of the ileo-pubic axis, by a seton needle, carrying four threads. The two apertures of entrance and exit of the needle must be formed beyond the perimeter of the phlegmasia of the skin. The pus is gently but effectually evacuated by pressure, and then compression is applied by means of pieces of agaric or a dossil, occupying all the space between the apertures without obstructing them. To these scraped lint is applied, and the whole is supported by a spica bandage. In the evening, somewhat forcible compression is again to be applied, so as to empty the abscess; and the pad is to be again applied. This is to be repeated twice daily until complete cure. Care is to be taken not to draw out the threads unless free discharge is secured, and their ends should be tied together. The medium time a bubo so treated requires for cure is twenty days, although some are cured in ten; and the points made by the seton leave hardly any marks. When the bubo has been opened before the entire gland had suppurated, the case is sometimes more tedious, a clear or sanguinolent fluid continuing to ooze. In such cases, vinous injections, combined with compression, have been found useful.—*Brit. and For. Medico-Chirurgical Review, April*, 1853, p. 569.

DISEASES OF THE EYE AND EAR.

84—ON THE USE OF CHLOROFORM IN OPERATIONS ON THE EYE.

By WHITE COOPER, Esq., Ophthalmic Surgeon to St. Mary's Hospital.

[It is one essential that the patient should be recumbent. Mr. Cooper prefers Dr. Snow's apparatus, to administering it on a handkerchief; as in the latter way it is sometimes liable to affect the operator himself. The patient should not partake of food for five or six hours before the operation. He may swallow a few fragments of ice, however, before it is commenced. If the operation takes place in the afternoon the continuance of the effect of the chloroform generally ensures a good night. Mr. Cooper particularly alludes to the operation of extraction. He says:]

With regard to the operation itself, it is important to have the point of the extraction-knife as sharp, and the edge as keen as possible. If there be the least *hanging*, the eye will be pushed before the knife, from the utter passiveness of all the muscles, and unless the operator is prepared for this, there will be great probability of the counter-puncture being made too near the centre of the cornea, whereby the section will be too small.

During extraction, as ordinarily performed, the lid is dropped as soon as the section is completed, and a pause takes place, to permit the eye to become quiet. Under chloroform this is unnecessary; there being no spasm, the curette may be used, and the cataract pressed out the moment the section is completed. When the lens has escaped, the eye presents a curious appearance, always supposing enough chloroform has been administered; the muscles being passive, the iris falls back in a concave form, and the cornea, having no support, sinks, becoming as wrinkled as a shrivelled apple. The eye having been gently cleansed, and the lids dried with a soft rag, the upper lid should be lifted by the lashes and brought down over the cornea; then two broad strips of adhesive plaster should be crossed over the eye and cheek, a bandage applied, and the patient left quiet for half-an-hour or an hour, after which he can be removed to bed. When all fear of vomiting has subsided, the plaster may be taken off; but it must be thoroughly softened with warm water, and lifted with the utmost caution and gentleness, so that there be no dragging on the lids. The subsequent proceedings differ in no respect from those practised after the operation, as ordinarily performed.

In these remarks I have especially mentioned extraction, but the general directions are equally applicable to all operations on the eye; and I may add, in conclusion, that when operating on an eye in a state of inflammation, as in the extraction of a foreign body, a shot, a fragment of steel, or copper cap, the value of chloroform cannot be too highly estimated.—*Association Med. Journal, Jan.* 7, 1853, *p.* 7.

85.—*Treatment of Strumous Ophthalmia.*—The great benefit often derivable from counter-irritation to the eyelids in this most troublesome disease is, we suspect, not generally known. At St. Bartholomew's Hospital, Mr. WORMALD is in the habit of first moistening the skin of both lids, and then smearing a stick of lunar caustic over the wet surfaces. The cuticle is, as a matter of necessity, blackened, and usually desquamates in the course of a few days, without the production of any pain. The application should be repeated every week or fortnight, according to the delicacy of the patient's skin. Its use commonly affords a surprising degree of relief to the distressing intolerance of light which mostly accompanies the affection. At the Royal Ophthalmic Hospital it is the practice to paint the tincture of iodine over the lids every three or five days, for the same purpose. Its *modus operandi* is no doubt similar, and, of the two, it appears to be the milder and more manageable remedy. We may add, that Mr. Wormald frequently employs his plan in the treatment of granular lids, and with good results. In order to the reproduction of the repeatedly destroyed cuticle, a determination of blood to the skin, and away from the conjunctiva, is kept up. On this derivative action its use doubtless depends, a process of chronic inflammation on one surface being thus cut short by artificially originating a necessity for increased nutrition on the other. —*Med. Times and Gazette, Jan.* 1, 1853, *p.* 24.

86.—*New Kind of Curette.* By HAYNES WALTON, Esq.—[In no operations more than those of the ophthalmic class does success depend upon the perfection of the instruments employed. At a meeting of the Medical Society, Mr. Walton stated, that, in the extraction of cataract, the complete laceration of the capsule of the lens was often imperfectly performed from the difficulty in using the curette. He also said that]

The flaccid state of the eye, which succeeded the section of the cornea, rendered the ordinary curette very liable to be entangled in the iris, not only during its introduction, but withdrawal also, from the eye; and, although there had been some modifications in the instrument, consisting in reduced size, yet the imperfection of it still remained. He proceeded to state, that the curette he had the honour to present to the Society overcame the impediment in question. It was one of small size, to which was fitted a guard that was worked by a spring and a trigger. When the instrument was closed, the extremity was quite blunt, being incapable of getting entangled in the iris. By pressing on the trigger the guard was withdrawn, and the extremity exposed ready for use. He spoke of the very ready manner in which it could be employed, and mentioned having fairly tested it on several occasions in the living body. The instrument was introduced shut, and carried through the pupil to the capsule of the lens, when it was opened, used, then allowed to close by remitting the pressure on the spring, and in that state withdrawn.—*Med. Times and Gazette, April* 22, 1853, *p.* 99.

87.—ON A CAUSE OF DEAFNESS NOT HITHERTO DESCRIBED.

By Professor SYME, Edinburgh.

Diseases of the ear may be divided into the *curable* and the *incurable*. The former are remediable in accordance with the ordinary principles of surgery. The latter belong to the "Aurists." The two following cases pertain to the surgical department, and present examples of a morbid derangement in the auditory organ,

which, so far as I know, has not been noticed by any writer upon this subject, either general or special.

Case 1. W. T., aged 17, was admitted into the Royal Infirmary on the 27th of September, 1848, on account of severe pain and deafness of his left ear. On looking into it, I saw at the bottom of the tube a small white body, apparently composed of bone, but so extremely sensitive of pressure that a satisfactory examination could not be accomplished until the patient was placed under the influence of chloroform. It was then ascertained that the growth possessed an osseous consistence, and as it did not so fully occupy the cavity as to prevent me from introducing the point of the small polypus forceps, I by this means easily effected its extraction. It was similar in size and form to the half of a small split-pea, and had adhered to the side of the cavity by a narrow neck. The patient sustained no inconvenience, and immediately regained his hearing, while the pain which had been so severe, for the preceding three months, as to render him unable for following his employment, completely ceased.

Case 2. R. H., aged 35, was admitted into the Royal Infirmary on the 5th of April, 1853, on account of deafness and uncomfortable sensations connected with his right ear, by which, he said, that for twenty years the ticking of his watch could not be heard. On looking into the tube, I saw an appearance so perfectly similar to that which has just been described, that I at once recognised the same condition. As the excrescence was larger than in the former case it did not allow space for introducing the point of the forceps, but allowed a probe to be passed round it, so as to let me ascertain the position of its connecting pedicle. By means of small straight scissors I divided this, and then lifted out the piece of bone.

The patient immediately regained his power of hearing.—*Monthly Journal of Med. Science, May*, 1853, *p.* 439.

88.—ARTIFICIAL TYMPANIC MEMBRANES.

By Joseph Toynbee, Esq., F.R.S.

[At a meeting of the Pathological Society,]

Mr. Toynbee said, that certain experiments and dissections, which he performed during the past year, had convinced him that the guttural orifice of the Eustachian tube was closed, except during deglutition, and he was subsequently led to infer, that, for the function of hearing to be perfectly performed, it was requisite that the tympanum should be a closed cavity, being convinced that, if it were not so, the sonorous undulations would not strike the tympanum with sufficient force. He determined, therefore, to close, entirely by artificial means, the next case of perforated tympanum that presented itself, and did so with great success; and, since that, he had employed an artificial membrane with great benefit in between thirty and forty cases. He (Mr. Toynbee) had used thin layers of vulcanised india rubber or gutta-percha, to construct the artificial membrane; to the centre of one of the surfaces of this membrane he attached a fine wire or stem of some other material, by means of which the septum could be passed down and adjusted. Mr. Toynbee employed this treatment, first in the case of a man aged 43, who had been discharged from the army for deafness. In each membrana tympani was an aperture, between one and two lines in diameter, and the mucous membrane of the tympanum was thicker and redder than natural, and discharged freely. Blisters behind the ears and astringent injections were prescribed, and a slight improvement followed. The man's hearing, however, still remained very defective, so that he was unable to follow any useful pursuit. At the commencement of last June, therefore, Mr. Toynbee placed in the left ear a very delicate layer of vulcanised india-rubber. When it was properly adjusted, the patient observed, that he heard more clearly than he had done for years. Ever since that time, this patient had worn the artificial membranes, and, with their aid, he could hear almost as well as any other person; but when they were removed, he could only hear words spoken in a loud voice. The man was then introduced, and the artificial membranes having been removed, the members of the Society had the opportunity of observing the perforate condition of the membrana tympani. After the removal of the

membranes, he could not hear unless loudly spoken to, but when he had replaced them, which he did with apparent readiness, his hearing was excellent.

[A conversation ensued afterwards as to the necessity of an aperture existing in the tympanum for the production of sonorous undulations. It was stated, both by Mr. Brooke and Mr. Toynbee, that it had been established by the experiments of Müller and other inquirers, that such an aperture was necessary only for the formation of loud sounds, such as were produced by the kettle-drum, but that a small instrument like the ear required no such aperture to enable the undulations of air in the tympanum to take effect.]—*Med. Times and Gazette, Feb.* 12, 1853, *p.* 176.

89.—ON THE MUSCLES WHICH OPEN THE EUSTACHIAN TUBE.

By Joseph Toynbee, Esq., F.R.S.

[The general opinion of anatomists upon this subject may be thus recorded:—]

That the guttural orifice of the Eustachian tube is always open, and that the air in the tympanum is constantly continuous with that in the cavity of the fauces. An examination of the guttural orifice of the tube in man and other animals has led the author to conclude, that, except during muscular action, this orifice is always closed, and that the tympanum forms a cavity distinct and isolated from the outer air. The muscles which open the Eustachian tube in man are the tensor and levator palati, and it is by their action, during the progress of deglutition, that the tubes are ordinarily opened. That the act of swallowing is the means whereby the Eustachian tubes are opened, is shown by some experiments, of which the following may be cited:—If the mouth and nose be closed during the act of swallowing the saliva, a sensation of fulness or distension arises from the air, which is slightly compressed in the fauces, passing into and distending the tympanic cavities. Upon removing the hand from the nose, it will be observed that this feeling of pressure in the ears does not disappear, but it remains until the act of deglutition is again performed, while the nose is not closed. In this experiment the Eustachian tubes were opened during each act of deglutition; during the first act, while they were open, air was forced into the cavity of the tympanum by the contraction of the muscles of the fauces and pharynx, and the guttural orifices of the tubes remained closed until the second act of swallowing, which opened the tubes, and allowed the air to escape. That the act of deglutition opens the Eustachian tubes was inferred also from the custom usually adopted of swallowing while the descent in a diving-bell is performed; by this act the condensed air is allowed to enter the tympanum, and the sensation of pain and pressure in the ears is removed or entirely avoided. The author gives an account of the Eustachian tube and its muscles in mammalia, birds, and reptiles. In some mammalia the muscles opening the tubes appertain, as in man, to the palate; in others, this function is performed by the superior constrictor muscles of the pharynx. In birds it is shown that there is a single membranous tube into which the two osseous tubes open; this membranous tube is situated between, and is intimately adherent to, the inner surface of each pterygoid muscle, and by these muscles the tube is opened. The conclusion to which the author arrives respecting the influence of the closed Eustachian tubes, is, that the function of hearing is best carried on while the tympanum is a closed cavity, and that the analogy usually cited as existing between the ordinary musical instrument the drum and the tympanum, to the effect that in each it is requisite for the air within to communicate freely with the outer air, is not correct. On the contrary, the author shows that no displacement of the air is requisite for the propagation of sonorous undulations, and that, were the Eustachian tubes constantly open, these undulations would extend into the cavity of the fauces, there to be absorbed by the thick and soft mucous membrane, instead of being confined to the tympanic cavity, the walls of which are so peculiarly well adapted to the production of resonance, in order that they shall be concentrated upon the labyrinth.

In corroboration of the above views, the author states, that in cases of deafness, dependent simply upon an aperture in the membrana tympani, whereby the sonorous undulations are permitted to escape into the external meatus, the power of hearing

has been greatly improved by the use of an artificial membrana tympani, made of very thin vulcanised india-rubber or gutta-percha, which is so applied as again to render the tympanum a closed cavity.—*Med. Times and Gazette, Feb.* 26, 1853, *p.* 229.

90.—ON A SIMPLE METHOD OF ASCERTAINING, WITHOUT THE USE OF THE CATHETER, WHETHER THE EUSTACHIAN TUBES ARE PERVIOUS.

By Joseph Toynbee, Esq., F. R. S.

[The common mode of exploring the Eustachian tube by the catheter produces pain and discomfort, and requires great experience in its use. The plan also of attempting to distend the tympanum by a forcible expiration, while the mouth and nostrils are kept closed, is by no means always successful.]

In a paper recently read before the Royal Society, the author endeavoured to show that the guttural orifice of each Eustachian tube is generally closed, and that the air in the tympanum is not continuous with that in the cavity of the fauces, except during the momentary act of deglutition. In proof of this, the following experiment was cited:—If the mouth be shut, and the nostrils be held closed by the finger and thumb, and then the act of swallowing be performed, a sensation of fulness or pressure is experienced in each ear; and this sensation does not disappear upon the removal of the pressure from the nose, but it vanishes at once when the act of swallowing is again performed, while the mouth and nostrils are open. During the first act of swallowing, a small quantity of air was forced into the tympanic cavities through the Eustachian tubes, and it therein remained until the second act of swallowing again opened the tubes and permitted the air to escape. The muscles whereby the Eustachian tubes are opened are the tensor and levator palati, which, it is well known, take origins from the cartilaginous walls of the tubes. As, during the act of swallowing with closed mouth and nostrils, air is forced through the Eustachian tubes into the tympanic cavities, it is evident that the permeability of these tubes can be ascertained by making the patient swallow some saliva while the mouth and nose are shut. Nor need the surgeon depend upon the statement of the patient respecting the sensation of distension felt in the ears; for by listening with the *otoscope*, should the Eustachian tubes be pervious, the air will be distinctly heard to enter the tympanic cavities, and produce a gentle crackling sound. The author next proceeds to consider the treatment of cases of obstruction of the Eustachian tubes, especially in reference to the use of the catheter. It having been ascertained that these tubes are obstructed, is it desirable to attempt to open them by means of the catheter? Believing that obstruction in the Eustachian tubes generally depends upon a thickened state of the mucous membrane covering the guttural orifice, and that this state is always associated with a thickened condition of the faucial mucous membrane of the tympanum, the author suggests, especially to those inexperienced in the use of the catheter, not to attempt to pass this instrument—firstly, because, in such cases, the mucous membrane of the Eustachian tube is often so tumefied that no ordinary degree of pressure will force the air into the tympanum; and, secondly, because, should the surgeon succeed in transmitting a few air-bubbles, the relief obtained is only partial, and endures for a very brief period, since the mucous membrane remains as thick as before, and the ill effects of the obstruction soon recur, from the air in the tympanum becoming of a different density from that without. The membrana tympani becomes more or less fixed. The treatment recommended is such as shall tend to reduce the thickened mucous membrane of the guttural orifice of the Eustachian tubes to a healthy state, so that their muscles may be able to open them. For this purpose, besides the use of general remedies, the solid nitrate of silver, or a strong solution of hydrochloric acid, may be applied to the mucous membrane of the fauces and to the apertures of the tubes, and gentle counter-irritation is to be kept up over the region of the fauces. By these measures, as a general rule, the mucous membrane can be reduced to its natural state, and the tubes become again opened by their muscles. Should this not take place the Eustachian catheter may now and then be introduced and air be gently blown through it. A modification, in the shape of the Eustachian

catheter, is suggested—viz., that it should be oval instead of round, the advantages derived being, that it not only can be passed through the nose with less discomfort to the patient, but its presence in the Eustachian tube is much less disagreeable from the absence of the convex surfaces which, in the rounded catheter, press against the nearly flat surfaces of the tube. In conclusion, the author expresses his concurrence in the opinion of Harvey and Kramer, that enlarged tonsils are never the cause of obstruction in the Eustachian tubes, and that any benefit that may have followed their extirpation has arisen from the loss of blood consequent upon the operation.—*Lancet, April* 9, 1853, *p.* 348.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

91.—ON THE INDUCTION OF PREMATURE LABOUR, BY THE METHOD OF PROFESSOR KIWISCH, OF WURZBURG.

By Dr. W. Tyler Smith.

[Hitherto the main agents in exciting the gravid uterus to expel its contents have been—the administration of ergot, dilatation of the os uteri by sponge-tents, the separation of the membranes from around the os and cervix uteri, or puncturing the membranes by some convenient instrument. The ergot is uncertain in its operation, and the use of sponge-tents is not only uncertain in its effects, but in some cases the application is difficult if not impossible. The same remarks apply also to the separation of the membranes.]

The operation of puncturing the membranes is far more effective than either of the preceding methods. It almost invariably brings on labour within a few days of its performance. But cases of deformity are met with, and these are the cases requiring most imperatively the induction of premature labour, in which the most experienced practitioners are unable to enter the uterus. In cases requiring the induction of premature labour, in the early months, before the development of the cervix uteri, the attempt to puncture the membranes must always be a serious undertaking. Numerous instances are on record, in which serious results have occurred from the attempt to evacuate the liquor amnii. Two or three years ago a patient died after the performance of this operation in whom, upon a post-mortem examination, the internal iliac was found to have been punctured. Dr. Radford has related a case, in which the Cæsarian operation was performed successfully, but the woman becoming pregnant again, an operation for inducing premature labour was performed, with a fatal result. The difficulty of reaching the os uteri, in cases of great pelvic deformity, was referred to at the discussion at the Medico-Chirurgical Society last year, as a justification of the Cæsarian operation; and the possible and known dangers of the proceeding were among the grounds of opposition to this great obstetric advance, put forward in the more recent discussions of the French Academy.

But the operation of puncturing the membranes, even when it can be performed readily, has its disadvantages. This is particularly the case when the operation is performed in the eighth or ninth month, with a view to save the child. The evacuation of the liquor amnii is always an unfavourable commencement of labour, particularly in cases of distortion, when turning may have to be performed, and when the child is subject to long-continued pressure before and during delivery. It is to the withdrawal of the liquor amnii, as one important consideration, that we may refer the considerable mortality to the fœtus which takes place in the induction of premature labour by this operation.

Under these circumstances, a new method of inducing premature labour, devoid of many of the disadvantages and of all the dangers of previous operations, cannot fail of being recognised by obstetricians as a great boon. It is to Dr. Kiwisch Ritter von Rottereau, obstetric professor in Würzburg, one of the highest obstetric names in Germany, that we owe the principle of the operation practised in the following case; and this is not the only improvement which his great practical genius has conferred upon obstetric medicine.

Without further preface, I proceed to detail the following example—the first, I believe, in which the plan of Dr. Kiwisch has been carried into operation in this country, and which was attended by complete success.

[E. H——, aged 37, was as near as could be calculated in her 37th week of gestation. She was the subject of a severe spinal distortion which had latterly much increased. She had borne three living children, but only after the most pro-

tracted labours. On examination, the uterus was greatly anteverted, and the urine for a long time had escaped almost involuntarily. The antero-posterior diameter of the brim of the pelvis was certainly under three inches. After carefully weighing these conditions, the induction of premature labour was determined upon, and Dr. Smith proceeds:]

I resolved on trying the plan proposed and adopted by Professor Kiwisch, of Würzburg, which consists in directing a stream of water from a height, by means of a syphon, continuously upon the os uteri. Kiwisch recommends the use of warm water; but knowing from experience, in cases of hemorrhage, the increased efficacy of the alternation of hot and cold temperatures in causing uterine contraction, I determined to try the effect of alternating the hot and cold douche. Kiwisch's mode of operating is alluded to in vol. viii. of the "British and Foreign Medico-Chirurgical Review," but it had been previously described to me by Dr. Schneemann, of Hanover. I followed his method, as nearly as I could under the circumstances, without any time for previous preparation: the only difference being in the variations of the temperature of the douche.

September 1.—Half-past nine, a. m.: A piece of india-rubber tubing, above eleven feet long, and half an inch in diameter, was connected with a straight tube from an injecting apparatus, five or six inches in length, the latter forming the uterine extremity of the syphon. A vessel containing two gallons of water of about 110° Fahr., was placed nine or ten feet from the ground, the patient being placed in an empty hip-bath. The proper end of the tube was now passed into the vagina, and directed towards the os uteri, where it was held steadily. After exhausting the tube, the other extremity was placed in the warm water. The stream immediately began to flow with considerable force against the os uteri, and continued until the whole of the contents of the vessel had been discharged. Two gallons of cold water were then poured into the vessel, and discharged in the same manner. The time occupied by the whole douche was from twenty minutes to half an hour, the patient only complaining of discomfort when the hot and cold currents first began to run. During the after part of the day she complained of dysuria and occasional pains in her back.

Sept. 2nd.—One p.m.: The douche was again applied in the same manner and quantity. In these applications I had the kind assistance of Mr. Walker, and the subsequent applications were entirely conducted by him; but I give the progress of the case from the notes he was good enough to take at the time.—Nine p.m.: She has had labour pains from half-past twelve till four, so much so that she was nearly sending for Mr. Walker. The douche was repeated at this time. The warm current was discharged as before, but upon the communication of the cold stream, she became hysterical, and had to be removed from the bath.

3rd.—Half-past nine, a.m.: Has had a restless night in consequence of pains "all over" her, but without any particular uterine pain. The dysuria and pain under the pubes are very troublesome. No appetite. The bowels have not acted for two days. Pulse 95. To take six drachms of castor-oil. Two p.m.: Has had irregular uterine pains since the douche in the morning. I made an examination, and the os uteri could now be felt dilated to the extent of half-a-crown, the fundus uteri being hard and contracted. The bowels have not yet acted. Douche repeated at this time.—Nine p.m.: Had considerable uterine pain for about half an hour after the last visit. Bowels have acted freely, with sickness. Pulse 100. The douche was again repeated, lest the uterine action should remit.

4th.—One a.m.: Mr. Walker was hastily summoned. The patient had suffered powerful expulsive pains, almost without intermission, since the last douche. The head presented in the second position, and about an hour before Mr. Walker's arrival the membranes had ruptured, but only a small quantity of liquor amnii had been discharged. These pains continued with increased vigour, and within half an hour from Mr. Walker's arrival, the child, a girl, was born alive without any assistance. The placenta quickly followed. After the birth of the child, a large quantity of liquor amnii which had been pent up behind the head, was discharged. A draught of ether and camphor was given, and she passed a very comfortable night. She had the usual amount of after-pain, and was hysterical on two or three occasions, but recovered perfectly, and both she and the child are now in good health. A little blood was discharged, as usual after the expulsion of the

placenta, but the lochial discharge was more scanty than after natural labour. The secretion of milk appeared naturally.

Thus, in this case, delivery was accomplished in sixty-four hours from the first application of the douche. But it must be borne in mind that twenty-seven hours elapsed between the first and second application of the douche, otherwise delivery would probably have taken place earlier. Five applications of the douche were made; but from the state of the os uteri, after the fourth application, there can be no doubt that labour would have proceeded, even if the fifth douche had not been employed. Before the first application of the douche, there had not been the slightest appearance of uterine disturbance.

The time between the first application of the douche in this case, and the completion of delivery, was less than frequently occurs in cases of puncture of the membranes. But it has been objected to the douche, by those who have used it on the Continent, that some women are less susceptible of its influence than others, and that the susceptibility of the same woman varies in different pregnancies. I suspect this variation may be obviated by performing the operation, when the time can be selected, at the eighth or ninth catamenial date, and by increasing the energy of the douche by the alteration of temperature.

In a certain class of cases, it becomes necessary to induce labour before the end of the seventh month; when this is the case, the operation simply has reference to the safety of the mother, the ovum being necessarily sacrificed.

In another class, the operation is not called for until after the completion of the seventh month, and in the great majority of these cases the operation is performed with a view to the safety of both the mother and the child, in consequence of the condition of the mother.

In a third class, the operation becomes necessary, in the latter months of pregnancy, to save the life of the child alone, the safety of the mother not being at all involved in the cause of danger to the fœtus, as in diseases of the placenta.

As regards cases requiring the operation before the fifth month, such as excessive and irrepressible vomiting, occurring to such an extent as to threaten death by starvation or debility, the induction of abortion by the douche would evidently be far preferable to either the dilatation of the os uteri, the attempt to puncture the membranes, or the administration of ergot. The latter has little power in such cases, while neither dilatation nor puncture could be effected without danger, because of the undeveloped state of the cervix uteri.

After the fifth month, when in the normal condition of the pelvis the os uteri can be reached, and the membranes punctured with tolerable facility, there is a certain number of cases in which the evacuation of the uterus is called for to relieve the effect of pressure or irritation, and in which the evacuation of the liquor amnii is alone sufficient to relieve the urgent symptoms. In these cases, the operation of puncturing the membranes has the advantage of affording immediate relief. I allude to dropsy of the amnion; excessive vomiting in the latter months of pregnancy; draining hemorrhage from partial separation of the placenta; the occurrence of insanity, convulsions, and chorea; or dangerous oppression of the circulation or respiration. Here the mere diminution of the size of the uterus, which may be obtained by the evacuation of the liquor amnii, without the immediate expulsion of the fœtus, sometimes affords instantaneous relief. In all such cases, puncturing the membranes is a more direct method of obtaining relief than any other procedure, and on this account may be preferred.

In cases where the operation is performed to save the child, without reference to the condition of the mother, as when the child has died, and again at the latter part of pregnancy, from imperfect circulation in the placenta, there can be no question of the superiority of the douche to any other method. Its operation is, in fact, scarcely if at all different from natural labour, and there is no risk whatever of injury to the mother from its employment.

In fine, from the accounts of the numerical results of the induction of premature labour by the ordinary method, it appears that nearly one-half of the children are born dead. This is partly owing to the necessity for its performance in some cases before the fœtus has become viable; and in part to the occurrence of difficult labours from deformity, and from the evacuation of the liquor amnii at the commencement of labour. This latter cause of increased mortality among children

born through the induction of premature labour, promises to be entirely obviated by the substitution of the douche for the operation of puncturing the membranes. There are, indeed, sound reasons for preferring the douche in all cases in which the fœtus is living and viable, and in which the immediate relief to be obtained by discharging the liquor amnii is not imperatively demanded. As regards the mother, the douche relieves her from all risk of mechanical injury to the uterus. It is well known that the proportion of mal-presentations is increased in cases in which labour comes on at the full term. In cases requiring turning, after the induction of premature labour, the danger to mother and fœtus is increased by the absence of the liquor amnii. But these and other difficulties, which follow upon the evacuation of the liquor amnii before the commencement of labour, when the fœtus has arrived at the latter months, are greatly diminished by the employment of the douche. This happy improvement promises to be of equal value to the mother and child. Above all, it is applicable in cases where the os uteri cannot be reached, where the induction of premature labour by any other known means is impossible, and where the only alternative is the danger of the Cæsarian section. —*Lancet, Oct.* 2, 1852, *p.* 297.

92.—INDUCTION OF PREMATURE LABOUR BY MEANS OF THE DOUCHE.

By Dr. Skeeleton, Master of the Lying-in Hospital, Dublin.

[The following is another case in which the application of the douche, as a means of inducing premature labour, was most successful. The mode of operating was, however, different to that employed in the preceding case. The history is as follows:]

Mary Fells, a woman having an unhealthy appearance, applied at the Dispensary of the Lying-in Hospital, in November last, to get relief, under the following circumstances:—

She stated that she suffered much inconvenience from the enlarged state of her abdomen, consequent upon considerable dropsical effusion into the peritoneal cavity; and that, in addition to the distress arising from the distension of the dropsy, she fancied herself pregnant, her menstruation not having returned since the June prior to her application, and some of the other ordinary symptoms of that state having occurred in due order.

Upon examination it was found that she was perfectly correct in the opinion she entertained as to her being pregnant, for by a little manipulation, through the excessively distended walls of the abdomen, the enlarged uterus could be traced to a certain extent, and auscultation announced the existence of the fœtal heart; as far as could be judged, she was at least five months gone with child.

She stated that the dropsical symptoms had not evinced themselves prior to her present pregnancy, but that, less than a month after the cessation of the last catamenial discharge, she suffered some obscure "dragging pains" in the right hypochondrium, which were followed by a brisk diarrhœa (causing her to seek for aid in one of the hospitals of the city), and that after the urgent symptoms were checked, "she first commenced to enlarge;" having attained her present size in less than four months. She also stated that she was nearly forty years of age, the mother of seven children, four of them alive and healthy; that her own health, up to June last, had always been excellent; and that she had always led a temperate life. She was prescribed for, with a view to lessen her present distress, and she was given an admission ticket for her approaching confinement.

On the 8th of the present month (January) she again presented herself, being forced to seek relief in consequence of the increased distress induced by the now enormous distension of the abdomen, impeding considerably her respiration; added to which, she had latterly some hematemesis, and had passed some blood per rectum; her countenance was now collapsed, her belly tense, its walls much attenuated, and her girth round the waist measured four feet two inches. The uterus could not now be traced; neither could we hear any fœtal sounds, but she said that she felt the motions of the child strongly. By vaginal examination the cervix was found

not as yet obliterated, and a small fœtal head could be distinguished, presenting above the incompletely expanded neck.

Under existing circumstances it was deemed expedient to induce labour; and thereby to remove so much of the additional bulk as was caused by the gravid uterus, before attempting any operation for the discharge of the effused fluid. This, then, was an admirable case for the douche bath; but it was determined to try it in a simpler form than that which had been previously used,—the apparatus employed being the common elastic bottle-syringe, manufactured by Robertson, of this city, and made use of in the Rotunda Hospital for injecting the vagina, uterus, and rectum with cold water, in cases of post-partal hemorrhage. Accordingly, upon the evening of the 9th, the first douche was applied in the following manner:—She was put upon her left side, in the ordinary obstetric position; a large pan, holding nearly two gallons, was filled with tepid water, and placed upon a stool at a convenient distance from the bed; another (smaller one) held so as to catch the water as it poured from the vagina after having played against the os uteri. One person now introduced the bone-pipe at the end of the flexible-tube, and with the index finger guided the stream against the orifice of the uterus, which was forced onwards by another person, who held the bottle extremity of the apparatus in the large reservoir of water. The process was continued for about five minutes.

On the evening of the 10th, the lips of the os were found soft and flaccid, and the os itself somewhat dilated. In the same manner, and for the same length of time, the second douche was applied.

On the afternoon of the 11th, the os was found about the size of half-a-crown, when the third application of the douche was made; and labour came on almost immediately after (half-past three o'clock, p.m.), and terminated at half-past ten o'clock at night, being of seven hours and a half duration. The first stage was a little tedious. At about ten o'clock the os was fully dilated; the membranes were then ruptured, and a very trivial quantity of liquor amnii evacuated. It was now determined to administer some ergot of rye, but while it was being infused, the uterus with a powerful effort expelled the child, which, for a child seven months gone (according to calculation), was exceedingly small and puny. As a precaution, however, against hemorrhage, the ergot was administered, and also some wine. The uterus expelled the placenta by its own efforts in a few minutes; and there was not any attempt at hemorrhage. She expressed herself much relieved after her delivery, and although the decrease in size was not very appreciable, nevertheless her respiration became much easier. It may be here stated that the child lived only forty-eight hours.

She continued in this slightly improved state until the 13th; but on the evening of this day she suffered dreadfully from dyspnœa, and prayed so hard to be relieved from the pressure of "the water," that tapping the abdomen was performed, and twenty-seven pints of straw-coloured serum drawn off; the removal of this quantity reduced the abdomen to a little less than half its former dimensions; after the operation the dyspnœa was much less, and she expressed herself as gratified at the result; but her improved condition only lasted for a day or two; she then gradually retrograded; on the 20th coma supervened, and she died on Friday, the 21st, ten days after delivery.

On post-mortem examination, the abdomen was found to be still largely distended, and on being laid open more than two gallons of fluid were discharged; the intestines were seen to be much distended by flatus; there was increased vascularity of the peritoneum lining the pelvis, and lower part of the abdomen, especially on the left side (where the trocar entered), and there were also a few flakes of lymph floating in the dropsical fluid.

The liver was a well-marked specimen of cirrhosis; the spleen was as large as an ordinary-sized liver, and, on section, had much the appearance of that organ.

In this short history there are some points of interest, independent of the process of induction. In the first place, there was no dropsy of the amnial sac; indeed, to the almost complete absence of liquor amnii might be attributed the delay in the first stage. Again, the rapidity with which the second stage was concluded,—lasting but a few minutes, although the abdominal muscles were totally excluded from any participation in the expulsive efforts,—is worthy of remark; thus, although the dropsy might have been deemed a complication which would tend to retard to

a considerable degree the expulsive stage of the labour,—incapacitating, as it did, the abdominal muscles from taking their share of the parturient efforts,—nevertheless, by being the cause of the diminutive size of the fœtus, it made up for the power it robbed from the uterus, by indirectly lessening the bulk of the body which that organ had by its own unaided efforts to expel. The weight, also, of the effused fluid might have had some considerable share in keeping the uterus well contracted during the third stage, and preventing (after the expulsion of the placenta) any hemorrhage, thus supplying the place of the hand, which in this instance could not have been applied.

But what is more especially to be noticed in the case is the means whereby labour was induced, and the complete success thereof. The apparatus was much more simple and easy of application than the one used in our former case (viz. Kiwisch's); its effect was magical, the os being opened to about one-sixth of its complete dilatation after the second douche, and labour setting in almost immediately after the third, the patient suffering no inconvenience whatever, not even requiring removal from her couch.

The method adopted in this case is, doubtless, the same as that employed by Professor Simpson, differing only in the species of "hand syringe,"—his being, I believe, an elastic cylinder, with a tube at either extremity, the one vaginal, and the other for conveying the water from the reservoir into the cylinder, in order that the hand may force it into the vagina by contracting its calibre, appropriate valves being placed so as to regulate the ingress and egress of the fluid; while ours was (as described) the common bottle-syringe. I have no experience of the syringe used by Dr. Simpson; but the latter was found to be rather distressing to work with sufficient force for five minutes, and perhaps his would be liable to the same objection; therefore, should another case present itself for induction, I have it in contemplation to employ the stomach pump, in order to obviate manual distress.

In conclusion, if it be true that the manner in which labour is induced by the douche is, as described, merely by the water acting as an external soft wedge insinuating itself into the os and between the internal surface of the cervix and the membranes, detaching the latter from the former (which explanation I have every reason to consider correct), I do not see why we should not—by imitating more closely the first stages of labour from without, and by repeated douches of moderate duration, and at intervals proportional to the duration of the intervals of that stage—in one day bring on the required labour. Upon this principle I purpose acting, when another opportunity presents itself.—*Dublin Quarterly Journal of Med. Science, May*, 1853, *p.* 483.

93.—A CASE OF PELVIC DISTORTION, IN WHICH PREMATURE LABOUR WAS INDUCED BY THE WATER DOUCHE.

By J. Prior Lacy, Esq., Senior Surgeon to the Newark Hospital.

[In this case the patient was aged about 37, and was then in her fourth pregnancy. She had had no previous miscarriages. In the two first labours craniotomy had been performed at the full time. In the third, premature labour had been induced at seven and a half months. In this last pregnancy the effecting of premature labour had also been decided upon—not in the usual way, but in the somewhat novel one advocated by Dr. Tyler Smith. She was admitted an in-patient on Oct. 29, 1852. A dose of castor oil was first administered, and the operation, which took place on the following day, is thus described:]

October 30th—half-past nine a.m.—The patient being placed in an open bath, and the uterine end of the india-rubber tube introduced into the vagina, and held opposite to the os uteri, two and a half gallons of water, at 110° Fahr., were poured into the receptacle; as soon as this had escaped through the tube the same quantity of cold water was poured in, and suffered to flow against the os uteri in like manner. The patient complained of some uneasiness when the cold current first began to run.

Three p.m.—The douche was repeated in the same manner as last described,

but commencing with cold instead of warm water. Since the first douche, micturition has been rather frequent, but little pain has been experienced.

Nine p.m.—The douche was repeated, commencing with warm water; the end of the forefinger can be introduced into the os uteri, but no pain of any consequence has occurred.

31st.—Half-past nine a.m.—The patient has passed a good night, and feels comfortable; the bowels have been again relieved; micturition frequent; slight pain in the back and abdomen; douche repeated, commencing with warm water.—Half-past two p.m.: Some slight shivering, nausea, and giddiness have been experienced since last report; douche repeated, commencing with two and a half gallons of cold, followed by five gallons of warm water.—Half-past eight p.m.: The symptoms continue pretty much as at last report; douche repeated in the usual manner and quantity, commencing with warm water. Though no perceptible change in the state of the os uteri has occurred, the patient whilst in the bath experienced increased shivering, nausea, giddiness, and pain in the back. Within an hour after the application of the douche, she had some rather severe rigors, and pains continued to increase in regularity and intensity till half-past eleven p.m. On making an examination at this time, the os was found as large as a crown-piece, the bag of membranes protruding, conical in shape, and very tense, even in the absence of pains.

Nov. 1st.—Half-past one a.m.—The os is fully dilated, and the bag of membranes has almost reached the os externum; the presentation was found to be either hand or foot, but the membranes were too tense to determine which; consequently, as the pains continued regular and severe, it was decided to evacuate the liquor amnii, so that in the event of its being necessary, turning might be immediately performed. On rupturing the membranes, an unusual quantity of water was discharged; one foot was found presenting, and being brought down, was secured by a noose. Pains now ceased almost entirely, and the patient obtained some sleep during the remainder of the night. At eleven a.m., she had an enema of warm water, which was repeated at two p.m.: Some slight pains succeeded. At half-past two p.m., the vagina was injected with warm water. No progress being made, a scruple of powdered ergot was given at three p.m., and repeated at half-past three, and four. Labour pains of considerable intensity commenced soon after the first dose, and continued to increase till half-past four, at which time a still born male child was expelled. The head was rather large and firmly ossified, but considerably moulded by its passage through the contracted brim. The placenta followed almost immediately. At bed-time the patient took an anodyne draught, followed by a dose of castor oil in the morning. The bowels were comfortably relieved. The after-pains were slight, and the secretion of lochia and milk was natural. The recovery was rapid and uninterrupted.

Labour commenced immediately after the sixth use of the douche, and thirty-six hours after the first use of the douche. Duration of labour, eighteen hours.

The account of the foregoing case has been most correctly drawn up by Mr. Rake, the house-surgeon to the hospital. It is evident that, in this instance, though the child was lost, the chances of its being born alive were considerably greater than if the membrane had been punctured before the commencement of labour. In the present case, the membranes were ruptured after the os uteri had been completely dilated by the influence of the douche. Should another case of this description come under my care, I should allow the liquor amnii to be discharged without any interference. The patient returned to her home in the country a fortnight after her delivery; and in passing through the village in which she resides, a few days ago, I called and found her quite well, and in the full employment of her domestic duties. I should wish to state, that I resorted to the operation entirely from perusing the successful case related by Dr. Tyler Smith in "The Lancet" of October 2nd.—*Lancet.* Dec. 4, 1852, *p.* 517.

94.—OBSERVATIONS ON THE INDUCTION OF PREMATURE LABOUR BEFORE THE SEVENTH MONTH OF PREGNANCY.

By Dr. Robert Lee, F.R.S.

[In a paper, read before the Medical and Chirurgical Society, Dr. Lee said that]

In the year 1812, in the third volume of the "Transactions" of the Society, Dr. Merriman had published a paper entitled "Cases of Premature Labour Artificially Induced in Women with Distorted Pelves, to which are subjoined some Observations on this Method of Practice." The author thought it significant that in thirty-two volumes of the "Transactions," embracing a period of forty years, there did not occur the history of a single case to illustrate this important rule of practice; while in these volumes there were reports of ten cases of Cæsarian operation. Of the safety, efficacy, and morality of inducing premature labour, in conformity with the rules inculcated by Mr. Merriman, the author thought most British and some foreign practitioners were convinced; but in respect to the induction of premature labour before the seventh month and in first pregnancies, to obviate the danger of craniotomy and the fatal effects of the Cæsarian section, in cases of great distortion of the pelvis, little had been said by writers on midwifery. To justify the practice, which the author regarded as equally safe, efficacious, and moral, before, as after the seventh month of utero-gestation, and in a first as in any subsequent pregnancy, he submitted the history of a successful case, which was attended with peculiar complications and formidable difficulties.

In October, 1849, with Mr. Booth, of Queen-street, Westminster, he saw Mrs. S——, who had been in labour forty-eight hours, and whose pelvis was distorted in the highest degree from mollities ossium. After perforating the head, which had not entered the brim of the pelvis, and by tearing in pieces the bones with the crotchet, delivery was accomplished after two hours' violent exertion. The partially dilated state of the os uteri greatly increased the difficulty and danger of the operation. The patient recovered without any unfavourable symptom. In December, 1852, the author learnt from Mr. Booth that the patient was again pregnant; and in the fifth month, some diagnostic symptoms of pregnancy being absent, any interference was postponed for another month. In January, 1853, the movements of the fœtus could be distinctly felt, and the necessity for immediately attempting to induce premature labour was obvious and urgent. The great distortion of the pelvis (the tuberosities of the ischia were almost in contact, and the sacrum projected forward nearly to touch the front of the pelvis) presented unusual difficulties, even in reaching the os uteri for the purpose of introducing the stiletted catheter to puncture the membranes. After a time, the fore and middle fingers of the left hand were passed into the vagina, and the anterior lip of the os uteri was touched with the tip of the fore-finger; the instrument was then guided into the cavity of the uterus, and the membranes punctured. The liquor amnii continued to flow till the morning of Friday, the 7th of January, when labour pains came on. At two p.m. the os uteri was so much dilated that the points of two fingers could be introduced, and the nature of the presentation ascertained. It was not the head, but whether shoulder or nates could not be determined. At seven p.m., the right hand was hanging out of the external parts, and the shoulders and thorax had sunk deeper into the pelvis. On a careful examination, it was found that the tuberosities of the ischia had been pressed considerably apart, the short diameter of the outlet being thus increased; and there was little doubt but that the bones at the brim had also yielded somewhat to the pressure. The shoulder being brought down as much as possible, the viscera of the thorax were removed by the crotchet; and after fixing its point in the spine as near as possible to the pelvis, after strong traction, the nates and lower extremities were drawn through, and the other superior extremity soon followed. But little difficulty was experienced in crushing or extracting the head. The placenta soon followed. Three weeks after the delivery, the author received a satisfactory communication from Mr. Booth, stating that the patient had progressed very favourably.

[Mr. Hodgson, the president, inquired what was the smallest diameter of the pelvis which would admit of the removal of the fœtus piece-meal?]

Dr. Lee said that his object in narrating the case was to bring under the con-

sideration of the Society the propriety of inducing premature labour, in certain cases, before the seventh month of pregnancy, to prevent the necessity of resorting to other and dangerous operations. With respect to the production of premature labour after that period, full discussions had taken place. With regard to the question put by the President, he might remark that it was most difficult to determine the exact measurement during life, but that he had never seen a pelvis with a less diameter than in the present case; and after this he felt confident that if premature labour was induced before the seventh month, no case could occur in which delivery could not be effected. In this case, also, it might be remarked that the diameter of the pelvis had been increased by the pressure of the head of the child, in consequence of the bones being affected by mollities. This might reasonably be expected to occur in cases of a similar kind. He wished to know if any one objected to the course of proceeding which he had recommended previous to the seventh month, to prevent the necessity of craniotomy, or of the Cæsarian section. He might here remark that he had the best reason to believe that one fatal case of Cæsarian section had occurred since the discussions on that subject before the Society; and this, too, in an instance in which it would not have been so difficult to effect delivery as in the case before the society. That operation, however,—he meant the Cæsarian section,—had not been recorded.—*Lancet, Feb.* 19, 1853, *p.* 186.

95.—*On the Relations between Menstruation, Conception, and Lactation, and the Influence of Lactation in causing Abortion.* By Dr. Robert Barnes, Obstetric Surgeon to the Western General Dispensary.—[These are the conclusions Dr. Barnes arrives at, after a careful inquiry into the subject:—]

First. Lactation exercises a considerable influence in preventing menstruation and conception.

Secondly. This influence appears to be marked and constant in some women, and to exist but feebly in others.

Thirdly. The influence of lactation in averting menstruation or conception, cannot for the most part be kept up longer than twelve months.

Fourthly. There is a close relation between the occurrence of menstruation during suckling and conception—*i. e.*, when menstruation appears during suckling, conception is very likely to follow.

Fifthly. When pregnancy takes place during suckling, and suckling is continued, abortion is very apt to follow.

Sixthly. The chief causes of the abortions brought about during suckling, are the revolt of the ovaria and uterus, evinced by the return of the menstrual nisus, and the deterioration of the mother's blood; to which must be added, superinduced disease of the ovum.

Seventhly. The practical conclusion that weaning should be enjoined not only whensoever pregnancy takes place, but also whensoever menstruation returns.—*Lancet, Dec.* 4, 1852, *p.* 513.

96.—USE OF TARTAR EMETIC IN TEDIOUS LABOURS.

By J. Stedman, Esq., Havant.

Case 1. Jane Clark, aged 27, of a weakly constitution. Sent for on the 16th of October, 1852, at 2, a. m. Found, on examination, that labour had scarcely commenced, although she fancied, from having had spurious pains for some days before, that it would soon be over. I comforted her as well as I could, and went home. On calling at ten o'clock (eight hours after my first visit), I found the os dilated about the size of a shilling, pains not frequent, and of very little service. I left her, desiring I might be sent for if she got much worse; and at seven, p. m., I was again with her. The os had dilated a very little; the pains were very slow and inefficient; the edges of the os soft, and all the parts moist. I gave her ant. tart. gr. ¼, pot. nit. gr. x.; repeated it every half hour. The first dose made her sick, pains came on quickly, and the labour was over at twelve o'clock, so that she was in labour only twelve hours (no very long time for a first case); and I

am quite convinced she would have been out of it much sooner if I had given the tartar emetic earlier; and I am equally convinced that, had I not given it, she would have kept me many hours longer.

Case 2. Mary Gover, aged 24, strong, healthy woman. Sent for at one, a. m., on the 21st of September. Found her sitting up, complaining of much pain, and surrounded by three women, who thought it was time I was sent for, as the pains were so strong. On examination, I found the os dilated about the size of a four-penny piece, and very rigid; pains very few and far between, and having scarcely any effect. I remained with her about two hours, just to please the anxious attendants, and then left her, and returned at eight, a. m. She had had a great many very strong pains (to use the expressions of the friends); and, on examination again, I found the os had certainly dilated a little, but a very little, and the edges were very hard and unyielding. I gave her ant. tart. gr. ¼, pot. nitratis gr. x., and repeated the dose every half hour for three doses. The effect was magical; the edges of the os became soft and yielding, the passages moist with abundance of mucus, labour progressed rapidly, and, at about half-past ten, it was all over. The second dose of the medicine made her very sick, and she threw up a great deal of bile. Now, in this case there was nothing particular to call for interference; the woman had only been in labour eight hours, and, for a first case, was doing well, and would doubtless have done very well if I had waited patiently; but, knowing the advantages of the tartar emetic, I used my best endeavours to make a short labour out of a long one, and succeeded admirably.

Case 3. Elizabeth Jones, aged 24, wife of a travelling hawker, a fine, healthy country woman. Sent for May 1st, at four p. m. Found every thing all right; the os uteri just commencing its functions, but with every appearance of being "a long job." As it occurred close to my house, I left her, and sent up a mixture with nit. potass. 3j., ant. tart. gr. iss., and desired the nurse to give her at once a quarter part of it, and continue it every half hour. It made her very sick; and at eight p. m., I was again sent for. I found the head coming down beautifully; and, at half-past nine o'clock, she and I were released.

I regret that I have not made notes of many other cases which have occurred in my practice, both of first labours and of lingering ones, occurring in women who have had families, in which the above plan has been so successful; but I think the three cases mentioned will prove the efficacy of my favourite remedy.

Remarks.—Although it is pretty generally admitted that tartar emetic has a very powerful effect on the uterus, and that in lingering labours it is very frequently used, still I think its efficiency is not so fully appreciated as it ought to be; and I am of opinion, after having constantly used it for the last ten years, that it is invaluable, not only in nearly all cases of lingering labour, but in very many first labours, in which there are no untoward symptoms, and which only exhibit that tediousness so generally incidental to primiparæ. Of course, I do not for one moment advance this plan of treatment as anything novel, because it has been tried by many of our most eminent accoucheurs; and I only refer to it now because I am convinced that much suffering may be mitigated, and that many a weary hour of watching by the bedside may be avoided by its judicious application; and this more especially in country districts, and among the lower orders, where, in a common, everyday, natural, first labour, you are sent for the moment the os uteri begins to dilate, and where, unless you are pretty well up to midwifery, you may be made to wait until it is all over, subjected, in very many instances, to all the annoying remarks and ignorant observations of two or three old women, who are quite sure that something ought to be done, and that, "whenever I have been with Mr. Jones or Mr. Jenkins, they have always helped the poor creature."

I repeat, that a great deal of this annoyance may be avoided, and that, independently of this, which is, after all, but a minor point of consideration, a great amount of suffering may be saved by giving the tartar emetic. I have selected three cases which have lately come under my care to illustrate my meaning; and they will be found to be types of thousands of others which will occur to the minds of practitioners.

I trust that in making these few remarks, although I may not be advancing anything very new or very brilliant, I may be the humble means of directing the attention of some of my younger brethren, at any rate, to a very useful practice, and a

very safe practice; one as serviceable in the first stages of labour as ergot is in the subsequent ones, and one which in many cases will, I think, be found to supersede the use of the latter remedy. For my part, I make a point of never going to a labour without my tartar emetic, and I would advise every one to do the same.—*Med. Times and Gazette, Dec.* 25, 1852, *p.* 641.

97.—RUPTURE OF THE UTERUS: ABSENCE OF SYMPTOMS.

By Dix Bean, Esq., Halifax.

[The following presents some features different to what are usually met with in such unfortunate cases:]

About 5 p. m., on Sunday, December 12th, I was called to attend A. D——, aged thirty-eight, in her fourth confinement. On arriving at the house, I found the patient lying quietly on her bed, and on inquiry I learnt that all uterine action had ceased abruptly about an hour and a half previously. Up to that period the pains had been regular and vigorous, since the commencement of labour on the preceding night. She complained of no pain, with the exception of a little in the right shoulder, which she attributed to her straining exertions; but I found the abdomen was a little tender on pressure; pulse 85, moderately full; extremities and surface generally quite warm. On examining per vaginam, I found the os uteri very high up, not very fully dilated, but quite dilatable. Beyond the os, I felt a hard body, which I supposed to be the head; but, having considerable difficulty in reaching it at all, I could not feel either fontanelle or suture, to point out the precise presentation. From the manner in which the pains had ceased, I was apprehensive that rupture of the uterus might have occurred; but in the absence of any tendency to collapse, pain, or other marked symptom likely to result from such a formidable injury, as well as from the fact of my being unable to detect any trace of the fœtus through the abdominal parietes, I was not without hope that my conjecture might prove unfounded.

As there were no symptoms denoting any immediate urgency in the case, I determined to comply with the wish expressed by the relatives, that I would wait a short time, to afford an opportunity for the labour to terminate naturally, if haply my fears respecting it were erroneous. I therefore returned home, leaving instructions that I was to be summoned instantly if any change occurred; and under any circumstances I was to hear from them between seven and eight, p. m. A few minutes before eight, the husband came to inform me that his wife remained in the same condition. I went with him at once, and found, on making an examination per vaginam, that the head had receded, and was no longer within reach of my finger. The os uteri was perfectly dilatable, and, on placing my hand over the abdomen, the uterus could be felt high up above the umbilicus, and communicated a sensation of great flaccidity.

The pulse was a little quicker, about 92; the abdomen rather more tender, but the whole constitutional symptoms were still very slightly marked. However, as she had not experienced a single pain since a little after two, p. m., and the pulse was beginning to increase in frequency, I determined to delay no longer, but introduce my hand cautiously and bring down the feet, a proceeding that, from the relaxed state of the uterus, I was sanguine might be accomplished without any additional injury to the uterine structure. I therefore called some of the friends aside, and informed them that I was of opinion the absence of the pains was owing to a severe internal injury having taken place during the last pain, a little after two, p. m.; that there was no hope of the labour terminating naturally; and that, as the woman was growing weaker, I would proceed to deliver the child at once, as being the only measure which gave the patient the slightest chance of recovery. I prepared to carry my intentions into effect, when, to my surprise, the relations interfered, and refused to allow me "to lay hands on her" until after the arrival of the Catholic priest, whom they had already privately sent for. From deference to their prejudices, and as they stated that the priest would arrive in a few minutes, I consented to await his coming; but it was not until an hour and a half's waiting had completely exhausted my patience, and I was taking my departure, that he

made his appearance. I returned with him, and, after explaining the case to him, I made another attempt to induce them to allow me to proceed; but they obstinately persisted in waiting until morning, in hopes of the case terminating naturally. I did all in my power to convince them of the extreme folly of such delay; but in vain. As the woman herself likewise expressed the same determination, and of course I could not consent to retain the responsibility attached to the case unless I was allowed to adopt the appropriate treatment, I at once informed them that with their refusal my connexion with the case definitively ended; and when they thought proper again to seek for medical assistance, it would be useless to apply to me, as I should not attend under any pretence whatever.

From the evidence given at an inquest on the body, held the ensuing Tuesday, it appeared that some slight pains occurred about an hour after my departure, but no medical man was sent for till the following morning, when Mr. Hodgson, surgeon of this town, was asked to attend. On his arrival, however, about ten a. m., he found that the woman had expired about half an hour previously. Acting upon the possibility of the child being still viable, he at once performed the Cæsarian section; but on dividing the abdominal parietes, he discovered both child and placenta lying among the intestines, the child quite dead, and, on examining the uterus, found an extensive laceration of the cervix.

In accordance with the evidence, the jury returned a verdict of—"Died from rupture of the uterus, after having repeatedly refused medical assistance."

The foregoing case appears to be instructive, as showing how slight the symptoms marking such a terrible accident may occasionally be; for, after the lapse of two hours, the pulse was only 85, the skin warm, and, comparatively speaking, no abdominal pain was complained of. Indeed, it was only the abrupt cessation of the pains, conjoined with the description given of the last one, that made me at all suspect the nature of the accident on my first visit; and even at ten p. m., the period of my final departure, the pulse had not reached 100, and the tenderness of the abdomen was not greater than I have frequently found present in lingering labours. This may, perhaps, in some measure be accounted for by the fact, that the liquor amnii had been discharged very copiously in the early part of the labour; and as the shock appears to have at once paralysed the uterus, probably very little of its fluid contents came in contact with the peritoneal surface.—*Lancet, Jan.* 8, 1853, *p.* 30.

98.—CASES OF HEMORRHAGE AFTER DELIVERY ACCOMPANIED BY SEVERE AFTER-PAINS.

By Dr. Francis H. Ramsbotham.

It is generally believed, and with truth, that the more strongly the uterus contracts after delivery, the less chance is there of hemorrhage occurring; and the greater, therefore, is the safety of the patient in respect to that source of danger. This aphorism, however, only applies to those cases in which the uterus is empty; if it contains any solid body—a polypus, for instance, as I have before shown, a portion of placenta adherent to its surface, a large piece of the fœtal membranes, or even a mass of tough, fibrinous coagula—it may contract most powerfully—indeed, inordinately—with much more pain than usually attends its action after the child's birth; and yet, at the same time, there may be such a discharge of blood flowing as to place the patient's life in imminent peril.

These cases are embarrassing to the young practitioner, especially as there exists among authorities on the obstetric science, a great diversity of opinion in regard to the treatment of floodings after the removal of the placenta; and this want of concord must necessarily tend in no small degree to confuse his judgment. Some, as Denman, Dewees, and Robert Lee, think the introduction of the hand for the purpose of clearing the uterine cavity too harsh a measure to be admissible under such circumstances; while others, as Burns, Collins, Gooch, Merriman, and my late father, describe the proceeding as being not only safe in itself, if carefully performed, but as the speediest and most effectual means of averting the impending danger. Others, again, as Blundell, Ingleby, and Churchill, think it,

should never be attempted, unless there be "inexorable need," or a "very pressing emergency," or till "all other means have failed."

I propose to report a few of the cases that have occurred in my practice, where a quantity of tough coagula, collected within the uterus, gave rise to intense suffering and other alarming symptoms, as a type of the kind of cases to which I refer, and as an exemplification of the practice that I have followed for some years with very satisfactory results.

The fact of my having seen the first seven cases that I shall relate, all in one year, is a proof that they are not very rare, but that they are met with often enough to make them well worthy of special consideration.

Case 1. On February 2nd, 1853, at five a. m., I was sent for to Mrs. S., aged 32, in the neighbourhood of Drury-lane. She had been in labour of her first child for two days, the membranes having broken on the first accession of pains; and she had been rather officiously treated, for her attendant had exhausted his stock of ergot, and had given her a considerable quantity of gin and water; she had taken two large doses of laudanum; and he had been rubbing some extract of conium on the cervix uteri; he was about to bleed her when I arrived. I found her walking about the room, unable to sit from the pressure of the child's head, looking weary. She had not slept for two nights, but the pulse was under 90, and there was no indication of exhaustion. The os uteri was not quite dilated, though the head was low in the pelvis; the scalp was puffy and swollen; the vagina and perineum very rigid; and the pains were frequent and irritating. I ordered her a little effervescent medicine, and directed that she should be kept quiet on the bed and that the external parts should be fomented. At two p. m., I ascertained that the pains had been much more natural and efficient since the meddlesome practice had been discontinued; the os uteri was entirely dilated, the vagina much more lax, and the head extending the perineum. The child was born at three. The placenta was expelled naturally in fifteen minutes, but the uterus soon relaxed, and a quantity of blood collected within its cavity. Pressure and cold caused it to contract; still there was a draining of coloured serum going on, and the uterus was acting at intervals very strongly, with much pain. After waiting nearly half an hour, without any relief to the symptoms, during which time she became rather faint, I introduced my hand fully into the uterine cavity, and removed four or five ounces of firm fibrinous coagula. The draining then ceased, as did the pains also; and she soon went to sleep. It was necessary to introduce the catheter once the next day; but she recovered perfectly well.

Case 2. On April 27th, 1833, at two p. m., I was requested to see a patient of the Royal Maternity Charity, who had been delivered of her first child by one of the midwives about two hours before, after an ordinary labour. The placenta came away without assistance, in less than half an hour; but the uterus relaxed, and she flooded much. The midwife had used cold applications and compressions of the viscus; and although these means had produced strong contraction, attended by unusual pains, they had not put a stop to the discharge. The patient was complaining of acute suffering each time the uterus acted, was faint, pale, and in a state of jactitation. I therefore introduced my hand at once into the cavity, and took away a mass of firm coagula, the size of a man's fist. The violent pains ceased immediately; the bleeding was stayed; and, after experiencing for a few days a pulsating pain in the head, she gradually recovered.

Case 3. On the next day, April 28th, at eleven p. m., a medical friend sought my assistance for Mrs. A., Burr-street, Wapping, in labour of her ninth child, at full time. He had been called to her an hour and a half before my arrival, and found her flooding violently. The discharge was much arrested when I saw her, though it had not quite ceased. The pains were feeble; and I could just touch the edge of the placenta at the posterior part of the neck of the uterus, the mouth being dilated to the size of a crown-piece. As there was no faintness, I allowed the case to go on uninterfered with for an hour. At the end of that time, however, the hemorrhage returned, and I therefore ruptured the membranes. The uterus now began to act more powerfully, and the child was born at half-past two. The placenta was expelled into the vagina in half an hour, whence I removed it; but the uterus relaxed, and flooding came on. For nearly two hours I used compression with my hand, and continued to apply cold vinegar and water without intermission. During a great part of this time the uterus relaxed and contracted

alternately; at last it became quite firm, though larger than it should have been. Notwithstanding its hardness, and the powerful spasmodic action that it took upon itself, the hemorrhage did not cease. She was in great pain every time a contraction occurred, became restless, and began to yawn. Feeling anxious for her safety, I passed my hand within the uterus, and brought away a quantity of very tough coagulum, as much as would fill a common-sized tumbler, part of which was almost white, the red globules of the blood having been squeezed out of it. From that time the pain and discharge both ceased. I left her at seven o'clock, and her restoration was unchecked.

Case 4. On May 11th, 1833, at half-past eleven p. m., a physician residing in the city came to me in great haste, to beg I would go immediately to the assistance of his wife, whom he thought dying. She had been delivered of her third child, under the care of a mutual friend, nearly two hours. The placenta passed in twenty minutes after the infant; but she was soon seized with violent uterine pains, accompanied with considerable hemorrhage, and she became faint. I found her very pallid; the pulse at the wrist was scarcely perceptible; the uterus was acting every four or five minutes with excruciating agony; and there was a copious serous discharge from the vagina, only slightly tinged with red. The uterus was much larger than it ought to have been, but exceedingly firm. Believing it to contain a quantity of coagulated blood, I proposed the introduction of the hand, for the purpose of emptying the cavity. This was readily acceded to; and I removed more than half a pint of very tough, solid clots. I had some difficulty in passing my hand through the mouth; and some, also, in separating the fibrinous matter from the internal membrane, for it adhered with considerable tenacity; however, I got it all away. From that time the agonising pain abated, the hemorrhage ceased by degrees, she soon fell into a slumber, and had a good and quick recovery.

Case 5. On July 24th, 1833, at half-past 11 p. m., a medical friend called me to the wife of a tradesman in Bishopsgate-street, who had been delivered of her fifth child four hours. I was told that the placenta had come away in ten minutes after the child's birth, without any trouble or hemorrhage; that her attendant had left her, and was re-called in an hour, and that he then found her suffering from severe after-pains, with considerable flooding. When I arrived, she was very faint, cold, and restless; the after-pains were frequent and very distressing; and the uterus was large and hard. Being quite sure that it was not empty, I passed my hand within the cavity, and took away a large quantity of firm coagula, among which were entangled some filaments of placenta, that had been adherent to the uterine surface. I met with much resistance in introducing my hand, in consequence of the strength of the uterine contractions, and had some trouble also in separating the pieces of placenta, on account of the firmness of their adhesion. But the organ having been emptied, the pain and hemorrhage immediately ceased, and the woman was restored without a bad symptom.

Case 6. On July 26th, 1833, at seven p. m., I was summoned to Mrs. J., in Aldgate, whom I had engaged to attend. It was her fifth child; the membranes broke on the 24th, and she had been uneasy ever since. Labour was considerably advanced, and she was delivered at half-past eight. The placenta was expelled without hemorrhage in twenty minutes, and I left her before ten. In an hour I was sent for again. She was then suffering most intensely from after-pains, was faint, and frequently vomiting. The uterus was large and very hard. She had evidently lost a great quantity of blood since I had left her, and there was a copious flow still going on. I introduced my hand, without loss of time, carefully into the uterine cavity, and extracted about half a pint of heavy, tough coagulum. The pain instantaneously left her, the hemorrhage abated gradually, and at twelve o'clock she was in a state to admit of my departure. She suffered from symptoms of re-action for a few days, but got about as early as she ever had done after any of her previous confinements.

Case 7. At one p.m., August 18th, 1833, my assistance was sought by a medical practitioner, for Mrs. C. Hoxton, who had been delivered of her first child three hours. The placenta had been retained by irregular contraction, and removed from the uterus by the hand; previously to which she had lost about two pounds of blood. When I arrived, she was faint, cold, and pale; the pulse was

very small; the uterus was excessively hard, and rather larger than natural; there was an uninterrupted draining going on, and she was suffering excruciating pains at intervals, evidently proceeding from uterine contractions. She had taken three drachms of laudanum without relief. I passed my hand into the cavity with considerable ease, notwithstanding the strength of the uterine contractions, and removed a quantity of the same kind of tough, fibrinous coagula, as existed in the other cases that I have narrated, considerably larger than an orange. She felt immediate freedom from pain, and the discharge ceased almost as suddenly. She became a little faint, but soon rallied; at four she was sleeping comfortably; and her recovery was uninterrupted.

In all these cases there was a draining of blood going on at the same time that the uterus was firm and comparatively small, and while the after-pains were frequent and powerful,—a condition of things usually described as being incompatible with dangerous hemorrhage. In all there was a considerable quantity of heavy, tough coagula within the cavity, and in all the paincea sed immediately the uterus was emptied, the discharge being almost entirely put a stop to equally speedily.

The pain is no doubt produced by ineffectual attempts on the part of the uterus to expel the offending mass within its cavity; and the very efforts set up for this purpose rather retard than further its escape; for, by compressing the coagula so powerfully, the more fluid parts are squeezed out, the firmer remaining behind; and the fibrinous clot thus left clings with such tenacity to the uterine walls as to be almost as difficult of separation by the unaided uterine contractions as a piece of adherent placenta itself would be. Hence the necessity for the manual removal; hence, also, the sudden cessation of the hemorrhage, and of the intolerable pains consequent on that measure being adopted.—*Med. Times and Gazette, March* 26, 1853, *p.* 316.

99.—PECULIAR CASE OF ACCIDENTAL UTERINE HEMORRHAGE.

By I. Harrinson, Esq., Reading.

[Mr. Harrinson was summoned to this patient on July 11th, 1832, at half-past eleven o'clock, a.m. She was about thirty-six years of age, and seven and a half months advanced in pregnancy. He says:—]

From her distressed condition, I could only gain the following particulars as to the method of her seizure. She was sitting in her kitchen, between nine and ten o'clock, a.m., preparing some culinary compound, when she suddenly felt faint; her bowels were twice moved in quick succession, and severe pain in the abdomen immediately succeeded. At half-past ten o'clock I found her lying on a sofa, complaining of faintness and of extreme pain in her abdomen. She fancied that labour was coming on. There was no discharge. Some brandy was given, and she rallied. I requested that she should be got to bed, and promised to see her again in an hour.

On my return, she was more distressed, more faint, and in more pain; in a few words, she was in a state of collapse.

On examination externally, the abdomen was very tense, and the seat of pain was principally at the fundus of the uterus, which reached and occupied the epigastric region. The pain was that of distension, of bursting, and indescribably distressing.

On examination *per vaginam*, I discovered the cervix uteri not obliterated, the os uteri just admitting the finger, the membranes unruptured, and the head presenting.

Amid the enveloping agony, she was now and then slightly conscious of the pains of labour.

I determined at once to rupture the membranes, which was readily accomplished. The waters flowed profusely and clear; there was not a trace of blood. About this time she had a convulsion, during which life appeared to be all but extinguished.

Dr. Cowan now saw her, soon after one o'clock, p.m. After a careful examination, we agreed that a grave accident had happened, but could not determine its

precise nature, nor its seat; nor whether it was perforation or rupture of some abdominal or pelvic viscus.

From, however, the condition of pregnancy, and the absence of any other recognised disease, we felt justified in thinking that the uterus must be the organ involved, and that rupture, partial or complete, of that organ had probably occurred.

The indications appeared to be, to relieve the pain, and to keep up the failing powers as well as possible, which were attempted to be fulfilled by opium and brandy. One drachm of tincture of opium was given immediately, and brandy and water at frequent intervals. There was an almost incessant cry for cold water, which was ungrudgingly supplied.

Three o'clock, p.m. Much the same; no relief. The same dose of tincture of opium was repeated. The os uteri was progressively dilating.

At five o'clock Dr. Cowan again visited her. I proposed that we should spare her little remaining strength, by now completing labour with the perforator and the forceps; premising, of course, that that could be done readily and with safety. Dr. Cowan agreed. The head was perforated and extracted with little difficulty. In a short time, one hand being kept firmly applied to the abdomen, the body readily escaped. Without waiting to separate the child, the hand was still kept on the abdomen, and I was surprised to find that it had scarcely diminished in size or in tension.

Firm pressure was kept up, and I was about to observe to the nurse that we had one or two more children to come, when one of the most fearful gushes took place I ever witnessed. Placenta, clots, and fluid blood, to the amount of some quarts, were expelled at the same instant. The uterus was at once carried down into the pelvis, and there fixed with the hand. There was no further escape of blood. The uterus showed no disposition to relax, nor did it apparently in the slightest degree.

She was immediately relieved of that dreadful feeling of distension, and lay easy for a time. Anticipating what was to follow, while I was guarding the uterus, the nurse was employed in giving as much brandy and water as she could get down. Another drachm of tincture of opium was given. It was now about half-past six o'clock. After a short time the restlessness increased; she tossed about incessantly, and the extremities became cold. At eight o'clock she apparently fell into a quiet sleep. At half-past eight o'clock, Dr. Cowan again saw her. It was agreed to let her sleep a little longer. She slept, but it was the sleep of death. At ten o'clock her breathing was observed to change, and in a few minutes she died, twelve hours from the time she was first seized.

Autopsy performed next morning. Dr. Cowan was present. The uterus was found well contracted; no blood was discovered within it. No appreciable disease in any organ.

I may here remark, that the cord was twice round the neck of the child, and was very short. I much regret that I did not measure it. There was no disease of the placenta.

What occurred, then, to produce so lamentable an accident, undoubtedly was a sudden separation, probably nearly entire, of the placenta from the uterus; and the only discoverable cause, an unusual shortness of the umbilical cord, and that twisted round the neck of the infant.

In the retrospect of such a case, a few points present themselves for consideration. Could a more accurate diagnosis have been arrived at? and if so, could the treatment have been materially modified?

To describe her condition in a few words, it may be said, that she was in a state of collapse, with extreme pain. These symptoms, however, would equally belong to perforation or rupture of any of the abdominal or pelvic viscera, or even to the rupture of an aneurism.

The only characteristic I could name, would be the state of the abdomen. It was distended to the utmost; was dull on percussion; and had an unusual, peculiar, doughy feel.

Her strength was supported after the most approved methods, and opium, that sustainer of the vital energies, was carefully administered. Labour was accomplished as soon as the state of the uterus allowed. When the uterus was emptied, no further discharge was permitted.

No example at all similar has occurred to me before. No writer that I can find has described one exactly corresponding; and some authors do not even name the possibility of such an occurrence. Dr. Robert Lee, in his "Clinical Midwifery," Dr. Copeman in "Crosse's Midwifery," Drs. Churchill, Ramsbottom, and Blundell, &c., give good cases and descriptions of "*accidental uterine hæmorrhage*," as ordinarily happening; but I can find no author giving an account of the diagnosis of such cases as the one related, where no discharge appears externally.

[In this case we think it would have been better simply to rupture the membranes if they could be easily reached, but not to hasten away the child by the steps here adopted. Even rupturing the membranes in such a critical case was a doubtful practice.

What was the case?—sudden syncope or faintness with great distension of the abdomen. This would indicate internal bleeding. What would stop the bleeding most effectually for the time till the patient could rally?—the coagulum at the mouths of the vessels supported in its position as it would be by the fœtus, membranes, &c.; withdraw this plug and the hemorrhage would almost certainly return. Therefore the practice would naturally be to keep the plug there till we saw a fit occasion to allow it to come away. Bringing the child away, and emptying the womb by artificial means, would insure the separation of this plug at a time perhaps when the woman was not fit for such a process. We should say, therefore, in such a case:—

1. Give stimulants in moderation and keep the woman horizontal.

2. If syncope continued, rupture the membranes, give a good dose of ergot of rye, and keep up the patient as well as you can by stimulants and food, but don't bring away the child yourself—let the womb expel it, and be ready the moment the child is born to compress the fundus uteri with a cold hand or cold wet towel, so as to compel it to contract rapidly and to excel placenta and coagula. If you save the woman from the first gush of blood you will probably save her altogether. Ed.]—*Association Med. Journal, Jan.* 7, 1853, *p.* 11.

[Mr. King, of Bath, after referring to Mr. Harrinson's case related above, makes the following remarks upon the treatment employed. He says:]

After the rupture of the membranes, a full dose of the secale cornutum might, I think, have excited the contracting power of the uterus, and, by its stimulating quality, have kept up the failing powers. The mode of delivery I do not consider to have been the most safe and proper. The blunt hook would have been a much safer instrument, and more applicable than the perforator or forceps. As there was no propelling action of the uterus, and the head presented, there would have been no difficulty in introducing it, and of getting a good hold. The child, I suppose, was dead, and it would not have been of much consequence to what part we had fixed it. The chin, occiput, and mouth, were to be easily got at, and there appears to have been no rigidity of the os uteri, resistance, or want of repose. There was only a lack of physical power: this the blunt hook would have safely and easily supplied. The operation of craniotomy can never, in my opinion, be justifiable, unless there be a hydrocephalic head presenting, or an unusual degree of ossification of the entire bones of the cranium, or a very great degree of deformity and contraction of the pelvic orifice, or a dying patient. I believe it would not be considered orthodox to let a woman die undelivered. The powers of action in this case did not not seem to have been exhausted, as she survived some hours after the loss of some quarts of *fluid* blood. Its being fluid is, I consider, a clear proof that that was not the cause of the previous symptoms; but that the clots resulted from the internal hemorrhage going on before delivery was attempted. We thus possess two means or ways of restraining uterine hemorrhage; firstly, by exciting the power of contraction; and, secondly, by promoting the formation of coagula. Mrs. G. must have sunk from the loss of the quarts of fluid blood. I never lost a patient from hemorrhage after delivery, who survived it an hour.—*Association Med. Journal, Jan.* 28, 1853, *p.* 88.

100.—*Case of Internal Uterine Hemorrhage.* By George King, Esq., Bath.—[Mrs. T., in the last month of her fourth pregnancy, after suffering great excitement

from some simple cause, complained of a slight pain in the back, and fainted twice within the hour. From the state of alarm induced, Mr. King was sent for. He says:]

It was about two o'clock when I saw her. I found her then on the bed. She appeared much depressed, and complained of tingling pains in the back, and she thought that labour would very soon come on. On examination per vaginam, there seemed to have been no discharge, and I found nothing more than the usual premonitory symptoms of approaching labour. In the parturient passage the mucous secretion was very abundant, and the parts most amply lubricated. The os uteri was thin, and sufficiently dilated for me to introduce my finger with ease. Having fully satisfied myself that there was no external hemorrhage, or any other alarming symptom, I did not interfere. I was with her about two hours. During that time there were no labour-pains, but she still continued to complain of great sinking, and fainted once, and was also sick; still this did not improve her condition (sickness often excites labour-pains). As she seemed much exhausted, I gave her a table-spoonful of brandy twice, but she kept yawning, and did not rally. The pains were slight, and less frequent, and not so strong as when she was first taken. Yawning and fainting occurring during labour, are unmistakeable symptoms of mischief going on: they must always be looked upon with suspicion, and must create in the mind of an observant obstetric practitioner some degree of alarm, and will require his most prompt and active assistance. As there was no advancement at half-past four o'clock, I then gave a dose of ergot, but it did not increase the pains much. On making another examination, I found the os uteri a little more dilated, and a pouch of the membrane presenting, about the size of a filbert; this I ruptured, but only a very little liquor amnii escaped. I then discovered that it was a natural presentation, and was satisfied that if the pains followed I had nothing to apprehend. Shortly after the membrane was ruptured, the pains became stronger and quicker, and in about two hours a dead child was born, without any unpleasant symptoms succeeding. Before the placenta was expelled, and in a few minutes after the child, a large clot came away with a very slight pain. Although it was not very large, this fully explained the fainting and the other unpleasant symptoms which had been observed during the day. The clot had no doubt been accumulating ever since the first fainting-fit in the morning; and would have gone on until checked by fatal syncope or labour. The vessels had no doubt ceased to bleed the moment the membranes were ruptured, and the formation of the clot was stopped by the expulsive action and contraction of the uterus. That took place in the afternoon, without producing the slightest appearance of anything like internal or external hemorrhage. It was very evident, from the appearance of the child, that it had not been dead long, and it was very clear that the mother had not gone her full time. She had herself expected to go three weeks or a month longer. I examined the placenta immediately after it was expelled, and there was a rent in its membranous covering, at the root of the umbilical cord; and on the surface of the placenta itself there was a large thick coagulum extending over it, an inch and a half in circumference, which was very easily removed. This coagulum was no doubt nature's plug, which had put a stop to the hemorrhage, and all other unpleasant symptoms. —*Association Med. Journal, Jan.* 14, 1853, *p.* 38.

101.—*Case of Uterine Hemorrhage.*—By WILLIAM EDWARD CROWFOOT, Esq., Beccles, Suffolk.—[The patient in this case had been frequently pregnant, but all the children had been born dead, excepting the last, in consequence of hemorrhage previous to or during the labour. On that occasion Mr. Crowfoot ruptured the membranes immediately on his arrival, and the child was born alive. In the next labour, in consequence of her poverty, she had hired a midwife, in spite of whose assurances, however, she felt confident she should die, if not immediately delivered. Her fears proved correct, for almost before her husband could leave the house for assistance, she expired. Mr. Crowfoot continues,]

Upon my arrival, an hour after her death, I made an examination per vaginam, and found little or no external hemorrhage, but the os uteri completely dilated, the vertex presenting, and the head firmly wedged in the bones of the pelvis. The

midwife could in no way account for the disastrous result, and said that everything appeared to her to be going on naturally; that the patient had no loss of blood, but only complained of a great feeling of faintness.

On the following day, I made a post-mortem examination of the body, which was that of a fine, well-formed female, of thirty-five years of age. Upon opening the abdomen, the viscera were found healthy, but pale and anæmic. The placenta, which had been attached to the posterior surface of the uterus, was separated throughout a large extent from its attachment; and coagulated blood, to the amount of six pounds, with a proportionate quantity of serum, was effused between it and the uterus. The head of the fœtus was so firmly wedged in the pelvis, that I had some difficulty in withdrawing it; and this circumstance accounts for the non-escape of the hemorrhage externally. Had the membranes been ruptured at the commencement of labour, this poor woman's life might possibly have been saved.—*Association Med. Journal, January* 21, 1853, *p.* 59.

102.—CASES ILLUSTRATING THE TREATMENT OF UTERINE HEMORRHAGE.

By Dr. J. M. Winn, Finsbury-square.

The following cases of uterine hemorrhage present several points of great practical importance, and may serve to illustrate the treatment required in some of the varieties of this alarming affection.

Internal Hemorrhage before Delivery.—Some months since, I was requested to see, in consultation with Mr. F. Wildbore, a middle-aged lady residing at Stepney, who was in labour of her tenth child. She had been seized suddenly and before labour pains had commenced, with alarming symptoms of collapse, accompanied by a very trifling oozing of blood from the vagina, but not enough to account for the extreme prostration. Before I arrived the external discharge of blood had ceased; yet it was evident from the feel of the uterus that internal hemorrhage had taken place to a great extent, and that the woman was in imminent danger. Although Mr. Wildbore had judiciously administered secale cornutum, the labour pains were entirely suspended. The os uteri was dilated to the size of a crown piece, and there was a head presentation. To deliver in her exhausted condition would have been hazardous in the extreme. The sudden rush of blood which would probably have followed the extraction of the child, during the torpid condition of the uterus, led me to suggest the use of stimulants, and to quietly watch their effects, before having recourse to the operation of turning. The result justified my decision. In a short time uterine pains came on, the head descended, and the labour terminated naturally.

Although the distinction drawn by Mr. Rigby, of Norwich, between those forms of hemorrhage, occasioned by separation of the placenta from the body of the uterus, as in the above case, and such as are produced by its being placed over the mouth of the womb, is of the utmost practical value, nevertheless it appears to me that the terms "accidental" and "unavoidable," which he and the majority of modern writers have used to designate these varieties, are not only objectionable but illogical. Who will say that the hemorrhage in the above case was not unavoidable as well as accidental, although the placenta was not situated over the mouth of the uterus?

Hemorrhage after Delivery.—The following case, which I recently attended with Mr. Kisch, of Circus-place, was remarkable from having occurred at a considerable period after delivery, and from the alarming symptoms which followed the loss of only a small quantity of blood, probably amounting to not more than ten ounces.

The patient, Mrs. I——, of Spitalfields, a stout but pale-looking woman, twenty-six years of age, was delivered of her second child twelve days before I saw her. Mr. Kisch informed me that the hemorrhage appeared for the first time on the ninth day, but quickly subsided. She then appeared to be going on well until the twelfth day, when the hemorrhage returned, accompanied with extreme prostration. Mr. Kisch had succeeded in stopping the hemorrhage before my arrival; but a most alarming state of collapse remained, associated with distressing sickness.

Mr. Kisch and myself remained in close attendance the whole of the night, and it was with the greatest difficulty that life could be sustained. Frictions, sinapisms, brandy, and opium, were incessantly required during the lengthened space of eight hours, and reaction was not clearly established until the expiration of that period. The patient ultimately did well under a tonic regimen.

The points of interest in this case are the occurrence of hemorrhage at an unusually long period after delivery, and the remarkable depression which ensued on the loss of the comparatively small quantity of blood.

External Hemorrhage before Delivery.—Last new year's eve I was summoned in haste to a Mrs. D——, a delicate woman, aged thirty, residing in the neighbourhood of Finsbury-square, and who had been seized with flooding in the seventh month of her sixth pregnancy. The loss of blood was considerable, but no very alarming symptoms had ensued; it was, however, clear that if the hemorrhage was not speedily checked the powers of life must soon fail. The os uteri was rigid, and dilated to the size of a shilling. As all external applications and internal remedies had failed to stop the flooding, I immediately gave a strong dose of ergot, and proceeded to hasten the delivery by puncturing the membranes. Shortly afterwards pains came on, and, as soon as the parts permitted, I brought down the feet (it was a case of breech presentation), and delivered her of a dead child. The placenta followed in quick succession, and the uterus contracted firmly. With the exception of general debility, my patient did not suffer from a single bad symptom until the end of the third week, when she was seized with headache and pain in the region of the right femoral vein, quickly followed by the usual signs of phlegmasia dolens. It is remarkable that before this attack of swelling of the leg there had been no disorder of any of the functions of the body. The lochia had subsided gradually, and all the secretions were in a healthy state. Occasional leeching, fomentations, and small doses of mercury-with-chalk combined with Dover's powder, soon reduced the swelling of the limb and restored it to its natural condition.

The accession of phlegmasia dolens so late as the twenty-first day is not a very common occurrence, although cases are on record in which it has supervened at a much later period. It is not easy to refer cases of this sort to an extension of inflammation from the uterine veins. The highly fibrinous state of the blood which exists after parturition no doubt predisposes to inflammatory affections, and it is possible that a deposition of fibrin in the vein may precede the inflammation of the blood-vessel and its surrounding textures. The occurrence of phlegmasia dolens in the *lower* extremities is not an invariable rule. In the early part of the last year I published a case in "The Lancet," in which the disease attacked the upper extremity.—*Lancet, April* 23, 1853, *p.* 382.

103.—ON THE SOURCE OF HEMORRHAGE IN PARTIAL SEPARATION OF THE PLACENTA.

By Dr. F. W. Mackenzie.

[There are many and diverse opinions as to the source of hemorrhage in separation of the placenta. Dr. Robt. Lee says it is "from the valvular-like venous openings in the lining membrane of the uterus, and of the arteries which are laid open on the separation of the placenta." Dr. Ashwell thinks it is from the open orifices in the walls of the uterus. Dr. Chowne is of the same opinion. Dr. Simpson, on the other hand, believes it to be from the placenta, while Drs. Radford and Murphy suppose it to take place from both the uterine and placental surfaces. Dr. Mackenzie goes on to say,]

Those quotations need not be extended; the foregoing are sufficient to show that the opinions of obstetric pathologists by no means coincide in regard to the source of hemorrhage in placental separations, and doubtless this discrepancy of opinion has in a great measure tended to those very opposite rules of practice which have been inculcated by different writers. It occurred to me, that some light might be thrown upon this question by selecting an animal, the organization of whose placenta approximated nearest to that of the human female, exposing the uterus

at the full period of gestation, and detaching portions of the placenta, so as to observe the actual source of hemorrhage. This experiment I was enabled very satisfactorily to perform, with the kind assistance of Mr. Marshall, of University College Hospital, and the following particulars comprehend a summary of the facts which were observed.

A large pregnant bitch, which it was calculated was within two days of the full period of gestation, was placed under the influence of chloroform, and the uterus was then fully exposed by an incision, made in the course of the linea alba, from the sternum to the pubes. The uterine tissues were now carefully divided over one of the placentæ, and at right angles with this incision another was made along the border of the placenta, so as to admit of an easy separation of the two organs. It was observed, that the portion of the uterus in apposition with the placenta was highly vascular and bled freely upon being divided; this, however, soon moderated, and then the separation of the placenta was commenced. The moment it was begun, profuse hemorrhage, of a bright arterial colour, took place in a continuous stream from the uterine surface, which had been previously adherent to the placenta. No bleeding whatever took place from the placental surface; and on continuing to detach further portions of the placenta, it was observed that each successive detachment was attended with increased hemorrhage from the uterus, but none from the placenta. In due time, the placenta was entirely detached, but the blood still continued to flow from the uterine surface only.

A second observation was now made with another placenta, and with the same results. No hemorrhage whatever was observed to take place from the detached placental surface, whilst blood poured profusely from the uterine, increasing as the detachment continued.

In a third instance, the placenta was abruptly torn away from the uterus, but blood continued to flow freely from the denuded uterine surface after the separation.

In a fourth case, the placenta, fœtus, and membranes were together removed from the uterine cavity. The investing portion of the uterus contracted immediately on their removal, but still a large quantity of blood was poured out from that portion of its interior to which the placenta had been attached.

The following observations were also made in the course of this experiment, which it may not be uninteresting to subjoin. 1. On detaching the placenta from the uterus, a number of white, elastic, filamentous-looking bands were observed to pass from one organ to the other. These were probably the utero-placental arteries: they were easily torn across, and their divided extremities would seem to close up and retract immediately upon being divided, as their orifices were not afterwards perceptible, nor did any blood issue in jets from the denuded uterine surface. 2. The blood, as I have remarked, which came from the uterus, flowed in a continuous stream, and was of a bright arterial colour. 3. Except from the divided edges of the uterine wound, and the denuded lining membrane of the uterus, no blood escaped from this organ. 4. Although no hemorrhage came from the detached surface of the placenta, whilst the organ was entire, it was yet found on tearing or lacerating it, while it was partially adherent, that blood flowed from the torn or lacerated parts; but this was to a very inconsiderable extent, and instead of being of a bright arterial colour, as was that which flowed from the uterus, it was of a dark purple or bluish tint. It should be added, that each fœtus was alive during these observations, and continued to live for some time afterwards.

Thus it would appear in the canine species, that the source of hemorrhage, in cases in which the placenta is partially detached, is exclusively the denuded uterine surface, so long as the placenta is entire; that the blood escapes in a continuous stream, and is of a bright vermilion tint; that no blood comes from any other part of the interior of the uterus; and that although a certain amount of blood may escape from the placenta, if lacerated or torn while still partially adherent to the uterus, this is comparatively small in quantity, and of a dark venous character.

How far these observations apply to cases of partial separation of the placenta in the human subject, is a question to which we can scarcely give a positive answer, until the structure of the placenta of the bitch has been further examined, and compared with that of the human species; more particularly as regards the disposition of the blood-vessels in its maternal portion. We know, for instance, that

in the human placenta, the utero-placental arteries open into large cells formed by the inner coat of the vascular system of the mother, and that between these a free inter-communication exists; whereas in the bitch the venous vessels of the maternal part of the placenta do not constitute a cellular or cavernous structure, but in form and distribution resemble ordinary veins. It remains then to be ascertained, before the value of these observations can be determined, whether there be a free lateral communication between these veins throughout, so as to permit the blood injected into them, where still connected with the uterus, to escape at the place where they have been opened by detachment.

Whilst, therefore, I regard these experiments as interesting in themselves, and as affording, in the general analogy which subsists between the structure of the placenta in the two cases, some support to the doctrine that these hemorrhages have exclusively a uterine origin, I must not be understood to affirm, that they are positively conclusive on this point. As I have already remarked, some further investigation into the structure of the placenta of the bitch is necessary, to enable us to assign to them their true value and significance. This I propose to undertake; and I will communicate the results in a supplementary paper.—*Association Med. Journal, Jan.* 7, 1853, *p.* 10.

104.—ON PROLAPSUS OF THE UTERUS AND VAGINA DURING PREGNANCY AND LABOUR.

By J. H. Houghton, Esq., Surgeon to the Dispensary, Dudley.

[There is a scarcity of information amongst medical writers upon this subject, and the following case is both interesting and instructive. During the whole of pregnancy there was extreme rigidity of the os uteri. Mr. Houghton says:]

Mrs. S., aged about 26, was taken in labour with her second child, on the 13th November, 1851, at 4 p.m. The pains continued feeble and infrequent till 2 p.m. on the following day, and I saw her about four. The head presented naturally; the os uteri was dilated to the size of a crown-piece; the passages were moist; and the membranes had been ruptured about twenty-four hours previously. However, on examining more carefully, I found that the os uteri was close to the outlet; that the walls of the uterus, from the margin of the os uteri to that part of the uterus against which the head of the child pressed, formed a cone about three inches long, the apex downwards, as though the neck of the uterus had dilated simultaneously instead of becoming obliterated before the dilatation of the os commenced. The lips of the os were exceedingly thick, rigid, and unyielding, and indeed the whole of the cone above described presented the same unyielding character. The pains were regular and tolerably strong. As the labour proceeded, the whole mass, uterus and head, came down together, dragging with it the anterior wall of the vagina, and at length obliterating the anterior *cul de sac* of the vagina; and the considerable tumour thus formed dilated the vulva. The descent continuing, and the dilatation of the os uteri hardly progressing at all, the uterus came so low down that the anterior lip of the os uteri was pushed outside the vulva, and the anterior half of the os uteri, and the posterior half of the vaginal orifice together, formed an elliptical opening, through which the head of the child could be readily felt, and if necessary could have been seen. Still the os uteri continued firm, hard, and unyielding, and eventually the whole of the os, with an extraordinary caput succedaneum, protruded from the vagina. Still the rigidity continued, and I began to lose all hope of the dilatation being effected by natural means.

The above is a pretty fair account of what took place until about eight o'clock, p.m., and then things were much in the state described. The patient being a pale, delicate, little woman, venesection was not performed, but tartar emetic in nauseating doses, was given, and nausea was kept up for about three hours. After this, two scruples of laudanum were administered.

At this time the condition of the patient was much as follows:—Os uteri rather larger than a five shilling piece; caput succedaneum protruding through the os; bones of the head pressing on the margin of the os, which was thick, hard, and very unyielding. Pains strong. Anterior *cul de sac* of vagina obliterated with each pain, and a disposition for the whole os uteri to pass externally at every pain. For

some time after the laudanum was given the pains became more moderate, but they never ceased, and at about ten o'clock they returned sharply; the os, if anything, showing more disposition to dilate, though still very firm, hard, and rigid; and I had serious fears that incision of the os uteri would become necessary.

All things considered, I determined to wait and see if the faint hope of dilatation which seemed to present itself, would be realized, and, whilst waiting to continue the same course of treatment which I had hitherto adopted, and which consisted in preventing the total inversion of the vagina, and entire protrusion of the head of the child and uterus *en masse* during each pain, this accident threatening with each contraction of the uterus, indeed once happening to a considerable extent when I had been late in watching a pain. To effect my purpose I proceeded in the following manner:—Having replaced the uterus and vagina as well as I could, I watched carefully for each pain, and when it was about to commence I passed the fingers of my right hand into the anterior *cul de sac* of the vagina, and the thumb of the same hand into the posterior *cul de sac;* my fingers and thumb thus embraced the os uteri and child's head, and whilst it allowed the latter to press against and dilate the former, I supported the whole mass in its proper position, or nearly so; and thus, as I conceived, imitated nature to the best of my ability by keeping the uterus artificially suspended in the cavity of the pelvis, and maintaining a point of support to the uterus, to allow of the pressure of the child's head upon the os, and hence its further dilatation. For some time the dilatation continued very slowly, and I could feel, from time to time, that some abrasion of the anterior and posterior lips of the os had taken place. The os now very tightly embraced the head, the posterior lip being softish, the anterior very hard and thick. At about half-past eleven o'clock, during a very strong pain, and whilst I was pursuing the same plan, I felt something suddenly give way, and the child was almost immediately born alive; in fact, laceration of the posterior lip of the os uteri had taken place to, I suppose, an inch in extent. No flooding followed, and the placenta came away without any difficulty; except that with it down came the uterus and vagina. The laceration was then distinctly seen, and the whole of the os uteri swollen and tumid; this was easily returned; the patient was, as might be expected, much exhausted; a stimulant and dose of opium were given, and she was allowed to rest.

November 16th. A good deal exhausted and very sore. Countenance good; tongue moist; pulse 80, soft; no fever. Passed her water twice, and had two motions; no swelling or tenderness in the abdomen; she is in good spirits; she sat up when her bowels were relieved; the uterus then came down and remains down now; the laceration and the abrasions on the anterior lip can be seen. I returned the uterus, and desired that it might be returned as often as it came down, and supported by a perineal bandage, first, however, fomenting it well.

17th. Some diarrhœa and pain in the uterus, but no distension or general hardness of the abdomen: for this, a poultice, and some grey powder, with Dover's powder, was given; and under this treatment these symptoms gradually subsided.

On the 27th, "the pain and tenderness in the abdomen have quite subsided, and her health is much improved." To-day she told me that she was much neglected in her first confinement, and has had prolapsus ever since. About a year since she had retroversion of the uterus, followed by a miscarriage at the fourth month; since this time her uterus has descended daily, and has *prolapsed every day during her pregnancy, even to the day of her delivery, when it had been down to a considerable extent, forming a large tumour externally.* At times she has had considerable discharge from it, and was aware of ulceration existing round the os. It has frequently been down as large as her two fists; and although she has been a great sufferer during her pregnancy, she has not consulted any medical man about it, but allowed it to progress without interference.

On the 29th November she had a severe rigor, followed by well marked symptoms of inflammation of the pelvic fascia, threatening suppuration; this, however, was averted. On Christmas Day she sat up for the first time, her health being good, and her spirits excellent. The prolapsus returns whenever she sits up, but the uterus is easily restored to its proper place when she lies down. The patient continues to suffer from prolapsus in an extreme degree, and the best devised means I have been able to suggest have failed to support the uterus in its proper

place. Her health now (February 24) is good, but she suffers much from the irritation the prolapsed organ causes.

[These cases are happily of rare occurrence. Dr. Merriman, in a short paper in the "Medical Times," gives an account of six cases collected from various sources. Dr. David Davies, also, in his "Principles and Practice of Obstetric Medicine," relates six more; and Dr. Ashwell mentions two others.]

From a review of these fourteen cases we find:—

That two cases were primiparæ; four, multiparæ; in eight the number of pregnancy was not named.

That in two cases the head presented; in twelve, the presentation was not named.

That in four cases there was great rigidity of the os; in ten, the state of the os was not mentioned.

That in thirteen the prolapsus was complete; in one, this was not mentioned.

That in one case venesection, tartar emetic, opium, remedies calculated to overcome rigidity, were used without benefit; in four, counter-pressure was used; in four dilatation; in four, the mode of proceeding does not seem clearly related; in two, incisions were practised; in one, turning.

In twelve cases the patients recovered, I presume with prolapsus uteri remaining; in one, death occurred; in one, recovery without prolapsus.

Rupture of the cervix uteri took place in one case.

The most striking fact arising from the above summary is, that out of fourteen patients who suffered from so serious an accident as prolapsus uteri during labour, thirteen recovered. Hence in these cases we have much to hope for, however serious they may seem at first.

It does not appear that the evidence before us supplies materials for deciding upon the best mode of treatment in these cases, for opinion seems to have been pretty much divided amongst the persons who conducted the cases recorded,—for four used counter-pressure; four, dilatation; four did not record their proceeding; two practised incision; one, turning. But the accounts of most of them are so meagre that we cannot attach much importance to them as guides to practice.

Counter-pressure, dilatation, and incision, are the modes of treatment which were most practised, and which seem most naturally to present themselves to the mind as the means best calculated to meet the difficulties we have to contend with, and on each of these a word may be said.

Counter-pressure, and by this I mean supporting the uterus *in sitû*, seems to be applicable in all cases of prolapsus during labour. It was used in four of the cases reported,—indeed, on seeing a case this mode of treatment at once suggests itself, (at least it did to me and to three other observers, though I had never before witnessed such a case, or contemplated the possibility of one occurring.) For, on seeing the uterus and vagina protruded, and reflecting how the uterus is naturally suspended in the pelvis, it follows almost as a corollary to the mind, that by supporting the vagina by means of the points of the fingers, and thus maintaining its proper *cul de sac*, a point is afforded for the uterus to act from, from which the head of the child or the membranes, if entire, may press upon the os, and thus facilitate dilatation.

Some of these cases, however, are attended with extreme rigidity, and spontaneous dilatation may not be so easily effected, and then mechanical dilatation or incision must be decided upon.

Mechanical dilatation was performed in four of the cases,—but these four cases all occurred when mechanical views of parturition were prevalent, and long before the physiology of labour was understood. Independently of any injury which might be done to the os uteri by the act of dilatation, I think that, upon physiological grounds, there are strong objections to it,—for if the views promulgated by Dr. Tyler Smith be correct, and of their general truth I feel no doubt, then by the act of dilatation we should be running great risk of producing violent uterine action by stimulating the reflex function of the uterus, and thus probably induce the greatest danger we have to fear,—viz., violent pains and laceration of the cervix or body of the uterus. Hence I should not be disposed to try dilatation were another case to come under my observation.

Incision of the cervix was practised in two cases, and both did well. During

the last few years a good deal of discussion has taken place on the propriety of incising the cervix in cases of extreme rigidity of the os uteri, and names of high repute are ranked among its advocates—Murphy, Lever, Tyler Smith, Kennedy, &c.

Dr. Murphy observes: "After all, in making incisions, we are only imitating nature, who, in her own way, often incises the cervix,—you cannot go wrong in following her example,—and, therefore, when you meet with these very embarrassing cases (simple rigidity), I feel justified in recommending you to incise the cervix;" and Dr. Lever considers "that the operation is free from danger or pain, or fear of hemorrhage." Dr. Smith also recommends it in extreme cases of rigidity.

Dr. Ramsbotham, in the last edition of his work, whilst arguing generally against the practice, and looking upon it in a much more serious light than Dr. Lever seems to do, would still allow it, but "only with extreme caution in unmanageable cases, and then not till all other means of procuring dilatation had failed."

But, if there can be an extreme case, I conceive that such a one as that I have recorded must be ranked amongst the number; and, remembering the imminence of the danger, the anxiety it creates, and the probable result of waiting too long,—laceration or rupture,—I am disposed to think that, after well weighing all the facts and the authorities that I have been able to consult, if another case should occur to me, I would try counter-pressure for a time, and if then the rigidity continued, in spite of the ordinary means of overcoming it, I would incise the os; and I am the more disposed to this conclusion by remembering the admitted uncertainty of all the means which have hitherto been devised for overcoming the rigidity of the os uteri.—*Dublin Quarterly Journal of Med. Science, May*, 1853, p. 308.

105.—ON PROLAPSUS OF THE ANTERIOR WALL OF THE VAGINA AS AN OCCASIONAL CAUSE OF FETID, PHOSPHATIC, MUCOUS URINE.

By Dr. Golding Bird, F.R.S., &c.

[Dr. Bird remarks that middle-aged females sometimes suffer great distress from symptoms similar to those occasioned by enlarged prostate in the male; that is to say, there is great irritability of the bladder, the urine when passed being fetid, ropy, and containing much mucus. He endeavoured to trace these symptoms to a similar cause, namely, a prevention of the complete emptying of the bladder, and the retention of a portion of urine, so as to produce in it decomposition. Such a cause, he considers a prolapsion of the anterior wall of the vagina. He says:]

Almost the first case in which I recognised the condition to which I am alluding occurred about eight years ago in the person of a stout, tolerably healthy-looking woman, who had been the mother of several children, and had ceased to menstruate for three or four years. She complained of great sense of distress in the lower part of the abdomen, with weight and bearing down. Walking was painful to her, and she was almost constantly tortured with a desire to empty the bladder. The urine was very offensive, and contained a large quantity of dense, ropy mucus, mixed with phosphates. Suspecting the possible presence of a calculus, I introduced a catheter, but little urine escaped, and no concretion could be felt. But on examining the vagina, a large pink looking sac depended from its anterior wall, and almost separated the labia. She was, indeed, suffering from prolapsus of the bladder into a pouch formed in the anterior vaginal wall. By keeping the bladder emptied by the daily use of the catheter, the urine soon recovered its healthy appearance, and the mucus decreased considerably. The decomposition of the secretion in this vesical pouch had evolved ammonia, which had irritated the bladder, and caused a copious secretion of mucus, loaded with the earthy salts, from its lining membrane. I sent the patient to my brother, Dr. Frederick Bird, as I believed no permanent cure could be obtained while the prolapsus existed. He applied the actual cautery to the anterior wall of the vagina, and the result was most satisfactory. After the slough came away, sufficient contraction occurred to prevent the formation of the vesical pouch, and the patient remained free from the ailment which had so long distressed her. I have met with so many analogous cases, that I am persuaded of the possibility of tracing a very large proportion of cases of fetid phosphatic mucous urine in the female to the imperfect emptying of

the bladder from prolapsus of the anterior vaginal wall. Every one is well aware of the frequency of enlarged prostate as a cause of this state of the urine in the male, and the circumstances to which I have now drawn attention will be found to be as frequent a cause of this state in the female. In more than one instance, I have seen complete prolapsus of the uterus produce a similar result, evidently by drawing the bladder out of its position, and thus interfering with its being perfectly emptied at the will of the patient.

So far as I have seen, the ailment in question is nearly, although not exclusively, confined to females who are called upon for laborious exertions generally too soon after their confinements; or, in other words, to those who are most subject to uterine displacements. Certainly I have met with but very few cases in the higher ranks.

Although this little communication presents no very attractive features, I do feel it deserves a moment's notice, as I have seen many poor women deprived of the means of earning their bread as domestic servants, from the apparent incurability of the ailment. A few months ago, a lady, who resides in my neighbourhood, expressed to me her deep regret that she was under the necessity of discharging her cook, a really valuable and trusty servant, on account of the urinous and even fetid odour which exhaled from her person. The poor woman had been out of place for a long time before entering this lady's service, on account of this very ailment. Her kind mistress had already obtained medical advice without any relief. On the patient calling on me with her urine, I found it to be strongly alkaline, exceedingly fetid, and loaded with mucus and phosphates. She never had been married, but had suffered, as she fancied, from prolapsus of the uterus for many years. I found that, after emptying the bladder by the catheter, as completely as possible, the urine secreted and removed, in half an hour was slightly acid, and scarcely fetid. I desired her to call on me early on the following morning, before attempting to pass water; and I then discovered the labia to be separated by a large soft red body, which turned out to be the depending anterior wall of the vagina filled with her prolapsed bladder. The use of an injection of infusion of galls three times a day into the vagina, the wearing of an abdominal support, with a perineal pad, and the administration of iron and quina, with dilute phosphoric acid, soon restored her to health and comfort, and enabled her mistress to retain her services.

A nearly identical case occurred in the person of a favourite servant of a lady of rank, who had actually obtained for her the opinion of more than one of our most distinguished surgeons, as she was supposed to be labouring under calculus. She was ultimately completely relieved in a similar manner. But there was a curious fact connected with this case worth mentioning, and which I learned from the mistress, Lady C——. It appears that, after failing to obtain relief from legitimate sources, she had been induced to consult a "wise woman," residing in the village where her lady's country residence was situated. This sibyl told her that she laboured under "sinking of the womb," and that she could cure her. On her next visit, the woman introduced something into the vagina. The operation gave her very considerable pain, but, to her great delight, it certainly diminished the irritability of the bladder and offensive character of the urine. She retained this body for some months, when it fell out; and, on being shown me, I was rather surprised to find that it was a large smooth black siliceous pebble, so common in the beds of brooks and shallow streams. Whatever induced the old woman to make her diagnosis, her clumsy substitute for a pessary had afforded no small relief.

I would, then, in conclusion, express a hope that, whenever a female is found to labour under the annoyance and distress accompanying the excretion of fetid mucous phosphatic urine, the state of the uterus and vagina should be carefully examined when the bladder is distended, and I believe the ailment will be often cured by relieving the prolapsed state of that viscus by the means well known to every practitioner.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 11.

106.—ON INFLAMMATORY AND NON-INFLAMMATORY RUPTURES OF OVARIAN DROPSICAL CYSTS.

By Dr. J. Y. Simpson, Professor of Midwifery in the University of Edinburgh.

[From the cases and observations of Dr. Simpson on this subject, the following conclusions may be deduced.]

1. The cysts forming an ovarian dropsy, occasionally rupture, *first*, from inflammatory effusion into and distension of their cavities; or, *secondly* (the contents of the cysts, being only the common bland secretion of such cysts, and unmixed with any inflammatory matter), they may rupture from mere over-dilatation and gradual attenuation of their coats, or under sudden mechanical pressure and injury.

2. When a cyst ruptures from the effects of inflammation, or contains within it at the time of rupture inflammatory secretions and materials, the escaping fluid, if effused into the cavity of the peritoneum, is always liable to be followed by dangerous, and generally fatal, peritonitis.

3. If, however, a cyst bursts into the peritoneum under mechanical injury, or in consequence of simple laceration from over distension of its cavity, and the fluid effused into the sac of the peritoneum is consequently not commixed with inflammatory secretion, there is little or no great tendency to peritonitis.

4. Sometimes, indeed, when thus a non-inflamed ovarian cyst ruptures into the cavity of the peritoneum, the life of the patient is preserved, or at least prolonged, by this accident.

5. When an ovarian cyst ruptures into a mucous canal, or upon the cutaneous surface, the safety or danger attendant on the laceration is not regulated by the inflamed or non-inflamed character of the effused fluid.

6. In cases in which the fluid of an ovarian cyst obtains an outlet by a mucous canal, or by the skin, a temporary or more permanent reduction of the tumour and comparative cure of it may be the consequence.

Lastly, that, as in many cases and points the surgery of art is an imitation of the surgery of nature, possibly the artificial repetition and establishment of the above modes of relief, if they could be imitated safely and certainly, may yet be found capable of temporarily arresting, if not curing, ovarian dropsies, in some appropriate cases, and more particularly in instances in which the bulk of the tumour is formed by one large preponderating cyst.—*Monthly Journal of Med. Science, Dec.* 1852, *p.* 531.

107.—*On the Position of the Patient in Tapping Ovarian Cysts.* By Dr. T. R. Tanner, Charlotte street, Bedford square.—[In the last volume of the "Retrospect" we mentioned the plan advocated by Dr. Simpson, of Edinburgh,—that of tapping in cases of ovarian dropsy in the recumbent posture upon the edge of the bed, instead of the half sitting posture upon a couch or chair. In speaking of the advantages of this plan of Dr. Simpson's, Dr. Tanner observes]

First, it is a comfortable one, free from restraint, and one from which the patient has not afterwards to be moved; secondly, the belly-bandage, and the two assistants necessary to tighten it, in order to promote the flow of the fluid when the sitting posture is adopted, can be dispensed with; thirdly, that the cyst is more completely emptied than in the usual way; and fourthly, syncope is much less likely to occur; for as this takes place from the want of support which the diaphragm experiences, owing to the shrinking of the tumour, so this want is less felt in the recumbent posture. It is only necessary to mention, that this woman has derived great relief from the operation, is stronger than she was, and has been freed from all feeling of distension, pain, and dyspnœa. Of course this relief can only be regarded as temporary; for it is much to be feared, that not only will the sac soon refill, but that the smaller cysts will not long remain dormant.—*Lancet, Nov.* 20, 1852, *p.* 463.

108.—ON RUPTURE OF THE PERINEUM.

By J. Baker Brown, Esq.

[In a paper read before the Medical Society, this gentleman completes his experience of the treatment of this distressing accident. Mr. Brown made a series of observations upon the same subject in 1851. The operation for its relief is thus described:]

The patient should be placed in the position for lithotomy: the knees well bent back upon the abdomen by an assistant to each leg; that the parts around should be carefully cleansed of hair by shaving; then each assistant should hold the sides of the vagina and perineum, so as to insure sufficient tension for the operator to make a clean incision with a scalpel down into the vagina about three quarters of an inch on each side, removing carefully and thoroughly the mucous membrane. Having done both sides, there would still remain a space covered with mucous membrane between those two sides, embracing the edges of the rectum where the sphincter was lost; that this must also be carefully denuded,—very carefully, because, if there remained the slightest portion of mucous membrane around, or even near to the rectum, then most certainly there would be a recto-vaginal fistula after the restoration of the perineum; that some operators, especially on the continent, had removed the mucous membrane by the scissors, but Mr. Brown stated, that that was a long and insecure method, and that the knife would be found quicker and better. Mr. Brown observed, that as soon as this stage of the operation was completed, the sphincter should be divided as before described; then the legs should be relaxed, and the thighs brought more in apposition, so as to allow the sides of the vagina to be grasped with the forefinger and thumb of the left hand, while with the right the sutures were passed deeply through each side, as deep as the denuded surfaces of the vagina; the first backwards, as near the rectum as possible without piercing it; the second and third in the same way; that the length of the incision should correspond with the scar of the ruptured surfaces; that the sutures were double, so as to allow the quill, or more properly, the piece of elastic bougie, to pass through each suture on both sides. Mr. Brown preferred twine to silk for the sutures, because it was less irritating, and produced, therefore, less suppuration; that the forefinger of the right hand should then be passed into the vagina, and the forefinger of the left hand into the rectum, so as to ascertain that there was no opening; that, having secured the three sutures firmly to the bougies, it was advisable to bring the edges of the incised surfaces together by three or four interrupted sutures; that, if this step of the operation be carefully done, union of the skin would quickly take place, and materially facilitate the adhesion of the deeper surfaces. Mr. Brown observed, that it had been asserted by many accoucheurs of the highest eminence, that, if the operation be performed immediately after the accident, no good would result, as the lochia would flow in between the surfaces, and thus prevent adhesion and union; this was the opinion entertained by Trogher, who states, in the seventh volume of the "Vienna Journal," for 1851, among other conclusions drawn from sixteen cases, "that a favourable issue could only be expected where there was a very moderate flow of lochia"; also, "that it was impossible to protect the margins of the wound from the injurious influence of the lochia." Mr. Brown believed that these objections were removed by dividing the sphincter; if not, the inner edges of the wound would be gradually drawn apart by the action of that muscle, and the lochia would penetrate; whereas, after division, those edges were perfectly passive, and steadily kept together by the sutures. Mr. Brown stated that, for the convenience of discussion, and in order to make his paper more intelligible, he affirmed four distinct propositions, which he hoped to demonstrate by the case which followed:—First, That the oldest and worst forms of ruptured perineum could be cured by the operation he had already described. Secondly, That the worst forms could be cured by operating immediately after the lesion. Thirdly, That the new perineum was not torn by, or prejudicial to, subsequent parturition. Fourthly, That those forms of rupture where the sphincter was not torn through, should be cured, to

prevent prolapsus uteri, &c. Mr. Brown proposed to illustrate the first proposition by five cases; then the second and third propositions by three cases; and, finally, the fourth proposition by two cases. In all, ten cases, which, in addition to the two already published, would make twelve cases.

Case 1.—Mrs. D, aged 45, admitted into Victoria Ward, St. Mary's Hospital, January 30th, 1852. Seventeen years ago confined with her first child; instruments were used, and ever since has had no control over the bowel; has had five more children. Fifteen years ago an operation was performed at Exeter, but unsuccessfully, for at the end of ten days she was worse than before. On one occasion she remained seventeen hours on the night-stool, and was generally unable to leave her house. The whole of the structures between the vagina and perineum have been torn through, there being no remains of the anterior half of sphincter ani; there is very little loose integument about the margins of the rent in the perineum consequent on the former operation.

February 4.—The day before the operation, a purgative was given, and on the day following, the operation was performed in the way already described, and the patient left the hospital with a slight superficial fistulous opening from the anus to the vagina, which was treated by caustic, and the patient resumed her duties with comfort. In this case the bowels had been confined by opium eighteen days.

In all essential points, the next four cases were similar to the foregoing; in each of them the operation signally succeeded.

Case 6.—Mrs. E., aged —, a private patient, confined with her first child, which caused complete laceration of the perineum; the rent was through the superficial muscular fibres of the sphincter, but not through the deep fibres nor through the rectum. The operation was performed December 29th, and on the 5th of the following January she was convalescent.

Case 7.—Mrs. D., aged 35, a private patient; February, 1851, delivered of her first child after forty-eight hours of continued labour; perineum continued like soaked pasteboard, and no care or attention prevented the perineum giving way entirely through the superficial fibres of the sphincter. Operation immediately performed, but the sphincter not divided. The cure, therefore, was much protracted. Aug. 27, 1852.—This patient was delivered of her second child, and, under care, no fresh rupture of the perineum occurred.

Case 8.—Mrs. V., aged 29, October, 1851, first child, twenty-four hours in strong labour, the last six producing no good results; os uteri gone, the head on the perineum; the forceps had been used by the medical man in attendance, and rupture of the perineum through its whole extent, and through the superficial fibres of the sphincter, but not through the deep fibres, was the result. The operation in the manner before described was performed, with the exception of the division of the sphincter, which rendered the union much slower than it would have been; but the patient did very well, and on the 12th Nov., 1852, Mr. Brown attended the lady, and she had a good labour, and no fresh rupture ensued.

Case 9.—Elizabeth Turnage, aged 37, admitted into Boynton Ward, St. Mary's Hospital, March 26th, 1852. Three years ago, at her confinement, the perineum was completely ruptured by the sudden descent of the head without medical assistance, at the moment of its extrusion. The rupture did not go through the sphincter or recto-vaginal septum, and she had not suffered from incontinence of fæcal dejections, but much from procidentia uteri, which partially extruded from the vagina, and pressed on the rectum, producing fissure of that bowel. The fissure was first cured by division of the sphincter, and the cure of the procidentia uteri attempted by the usual remedies for the restoration of the health, but did not succeed on account of the absence of the floor of the vagina, and on April 7th, the operation for the restoration of the perineum was performed, as already explained, and on the 24th the patient was discharged cured, with a sound perineum, and free from procidentia uteri.

Case 10.—Elizabeth A., aged 23, admitted July 2nd, 1852, into Boynton Ward, St. Mary's Hospital. Had been married twelve months, confined five months ago, labour lasted three days, no instruments used. The perineum had been ruptured through its whole extent, but the rent had not passed through the sphincter. There was procidentia uteri, and discomfort about the rectum, produced by pressure of the uterus on that bowel. On the 7th the operation was performed as previously described, and on the 30th she was discharged cured.

Dr. Barnes was inclined to think that a great improvement would be effected in Mr. Brown's operation if the bead sutures, invented by his friend, Mr. Brooke, were substituted for the quill sutures. These bead sutures had been found very useful in cases of perineal laceration, and could be applied any where, and at any depth from the surface. Moreover, by their employment, not only the external wound, but the internal also, that is, the wound of the vaginal mucous membrane, could be brought together, and a large gap which favoured the formation of matter would be prevented. If this were employed, it would not be necessary to divide the sphincter; and this was, he conceived, no slight advantage to the patient. In Mr. Brown's operation, the sphincter had been divided in a manner inferior, in his (Dr. Barnes's) opinion, to the subcutaneous section practised by the late M. Blandin, of Paris, for a similar purpose.

[Dr. Murphy, considering the obstetrical rather than the surgical division of the subject, said, there were cases of perineal laceration of a less serious nature in which the propriety of operation might be questionable.]

When the laceration had involved only the anterior fibres of the sphincter ani, and the patient still retained the power of commanding her motions, especially if the perineal space were originally of small extent, he thought it would be more prudent to abstain from closing the rent, because, at the next labour, it was highly probable that rupture would again take place. If the operation could restore to the patient a perfectly extensile natural perineum, he should not object to its performance; but this was not the case, for the cicatrix resulting from the closing of the wound was of a far less yielding nature than the original structure, and therefore was doubly susceptible of laceration. He was decidedly opposed to, and was almost induced to say that he protested against, the performance of an operation in recent cases as soon as possible after the occurrence of the rupture. It was vitally important for some time after delivery to avoid the accession of inflammation in the tissues adjacent to the uterus; and if inflammation were set up in the vagina, there was great reason to dread its extension. Besides, it was well known that a laceration of the perineum, which a few hours after delivery might appear of formidable extent, would frequently contract in two or three days to one of insignificant size, so that an operation practised prematurely might have been altogether unnecessary. For these reasons, he considered that in all cases of perineal rupture in which an operation was resolved upon, it would be infinitely better to defer the operation than to practise it immediately after parturition.

[Mr. Brown, in conclusion, remarked that:]

Dr. Barnes had recommended him to substitute the bead suture of Mr. Brooke for the quilled suture, but it was impossible that the bead suture, however excellent it might be in vesico-vaginal fistula, could succeed better than the quilled and interrupted sutures had done in his hands. Dr. Barnes mentioned, that if the bead suture were employed, division of the sphincter would be unnecessary; division of the sphincter, however, was one of the most essential features of his operation, and without its performance he should not look with any confidence for success. He had never seen any harm result from the prolonged constipation, and he believed that the opium exercised a most salutary influence over the patient, by allaying the irritability of the nervous system, and so diminishing the risk of inflammation. He preferred complete division of the sphincter with the skin covering it, to the subcutaneous section of Blandin, because it was of the highest importance to relax the integument and cellular tissue as well as to paralyse the muscular fibres. Dr. Murphy was, he thought, needlessly apprehensive of vaginitis when the operation was performed immediately after labour; he (Mr. Brown) thought the exhibition of opium protected the patient from inflammation, and he would never, under any circumstances, resort to the operation without freely administering that narcotic. In conclusion, Mr. Brown referred to a case in which a lady, who had become reduced in circumstances, was obliged to perform the duties of a governess, having a considerable distance each day to walk to her pupils. She had suffered in one of her labours a severe laceration of the perineum, and now had large prolapsus uteri in consequence; she was obliged to wear a bandage in order to keep the uterus in position; but this was a source of great discomfort to her, and her health was failing in consequence of the condition in which she was placed.

He (Mr. Brown) had advised her to submit to the operation, and he felt sure that after its performance she would be in a state of complete comfort.—*Med. Times and Gazette, Jan.* 15, 1853, *p.* 72.

109.—ON DYSMENORRHŒA.

By Dr. James Henry Bennet.

[Speaking of the form of disease produced by contraction of the os internum, Dr. Bennet says:]

The cause of the pain experienced under the circumstances is evident. The cavity of the non-pregnant healthy uterus not containing more than about ten or eleven drops of fluid, as soon as the catamenial secretion commences from the lining membrane of the uterine cavity, unless the blood find a free exit through the os internum and the cavity of the cervix, it distends the uterus, and gives rise to great pain. The obstruction may merely be at the os internum, spasmodically contracted; in which case, as soon as it has been overcome, the blood escapes freely, and pain disappears. But if the os internum is permanently contracted, or the contraction exists in the cervical canal, the pain may continue throughout the catamenial period. A contracted state of the upper part of the cervical canal, or of the os internum, is not, I believe, an unfrequent complication of inflammation of the cervix, from the swelling and hypertrophy of the substance of the organ which it occasions. This remark, however, does not apply to the *inflamed region* of the cervical canal, which is uniformly dilated by the existence of inflammation. I do not, however, think that Dr. Simpson's criterion of the existence of contraction of the os internum is entirely to be depended upon. Dr. Simpson believes, if I am right in my interpretation of his views, that unless the uterine sound pass without effort into the uterine cavity, there is contraction of the os internum. Now the careful examination of many hundred females with the sound, has led me to a different conclusion. There evidently exists at the os internum a kind of muscular sphincter, formed by a strong band of the circular muscular fibres of the cervix, and destined to close the uterus during the latter stages of pregnancy. Generally speaking, this sphincter, in the natural state, is sufficiently closed to prevent the uterine sound passing into the cavity of the uterus, unless a considerable amount of pressure be exercised. In nearly all the females I examine, in the interval of menstruation, the sound passes easily along the cervical cavity, but stops at the os internum, and that, when there is no reason whatever to suppose the existence of a morbid coarctation.

[The above extract is taken from a review in "The Lancet" of Dr. Bennet's recent work on "Inflammation of the Uterus, its Cervix, and Appendages; and on its Connexion with Uterine Disease."]—*Lancet, Dec.* 18, 1852, *p.* 571.

110.—*Case of Chronic Bronchitis, complicated with Dysmenorrhœa—Treatment of the latter by Biborate of Soda.* Under the care of Dr. Bennet.—[In Germany, the biborate of soda is used to produce uterine contraction, and to facilitate the excretion of lochia and the menstrual fluid. In the former case it is given along with ergot, and in the latter, alone. From the frequency of the occurrence of dysmenorrhœa, and the difficulty of its management, it is important to ascertain whether it possesses any value as a remedial agent in this disease. The following case is selected as illustrating its efficacy:]

Eliza York, aged 26, of dark complexion and florid appearance, was admitted as an out-patient Aug. 23, 1852, on account of cough, attended with some dyspnœa. She stated that she had been losing flesh slightly for several months; the respiratory sounds beneath each clavicle were somewhat harsh, but no decisive indications of pulmonary disease could be detected. It appeared, that although her cough had been the more alarming to her, yet she had in reality suffered chiefly from a very painful condition of menstruation. She had been married for two years, and during the whole of that period, the catamenial discharges had been regular in their recurrence, lasting usually for about a week, and attended throughout with such great suffering, that she had always been compelled to observe the recumbent posture for the greater part of the time. The matters discharged were usually

very dark in colour, and mixed with clots of blood and numerous flakes of whitish membrane. In the intervals, more or less of leucorrhœa was constantly present, accompanied by a dull aching pain in the lower part of the back. Her tongue was redder than natural, covered at the tip and edges with prominent papillæ, and somewhat fissured. Pulse 96, and a little sharp. Conformably with what is mostly observed in those who suffer from aggravated dysmenorrhœa, she had never conceived. She had been subjected to a great variety of treatment, but with very little advantage, and the last menstrual period had been as painful as any of the preceding.

As it appeared probable that the pulmonary affection was either mainly or altogether sympathetic, Dr. Bennet directed his treatment solely to the uterine affection, and prescribed his usual formula of the borax, in conjunction with a mild stomachic.

R. Magnes. carbon. gr. v., pulveris rhei gr. ii., sodæ biborat. gr. x., infus. calumb. ℥i., ter die sumend. Empl. ammon. cum hydr. lumbis applicand.

August 30.—The dose of medicine occasioning sickness, there was added to it acid. hydrocyan. dilut. ♏ii.

September 20.—The menstrual period occurred last week, and was attended by scarcely any pain. The discharge lasted for five days: it was copious, and unmixed with either shreds or flakes. During the whole time she continued at her ordinary avocations, and enjoyed a degree of comfort to which at such times she had been for years a stranger.

Pt. medicament., bis die sumend. Pt. empl.

October 18.—Has again menstruated without any material suffering. The aching sensation in the back has entirely disappeared, the chest symptoms have also all but vanished, she feels very well and is anxious to be discharged.

We are unable to discover in the above case any source of fallacy which should prevent us from attributing to the remedies the markedly good effect which followed their exhibition. In that effect, as far as the uterus is concerned, it may be safely assumed that the hydrocyanic acid had no share, not only on account of its possessing no known powers in that direction, but because the prescription, as at first ordered, which is the one usually employed by Dr. Bennet, has produced, in very numerous instances, equally pleasing effects. As the prescription contains several articles, some of our readers will perhaps doubt the fairness of attributing to one of them the whole of the results; and, from never having seen the borax exhibited alone, we cannot give a positive opinion. Our belief, however, is very strong that it alone was the effective ingredient, and we ground the belief on the fact, that various combinations into which it entered have succeeded equally well, and that in several cases its addition to a mixture which had been in use without benefit for some time at once produced the desired result.

In no class of maladies than those affecting the menstrual function is it more necessary to remember that diseases are not always the same which are called by the same name, for under the term "dysmenorrhœa" are included affections which, depending on nearly opposite causes, are curable by almost contrary remedies. In selecting the latter it is, therefore, of the utmost importance to discriminate carefully the real nature of the case. The class of cases to which the treatment by borax appears to be especially adapted are those in which no organic disease exists, but which, occurring in tolerably robust subjects, are attended by slight pyrexia, pain in the loins, the expulsion of flakes and shreds of lymph, and the other signs of a disease of active congestion rather than mere nervous derangement.

Whilst on the subject of dysmenorrhœa, we cannot help mentioning a very interesting pathological specimen lately shown to us. It consisted of a *complete fibrinous cast of the uterus*, and had been expelled by a middle-aged married woman, during an attack of extremely painful menstruation. It was about two inches long, and one in breadth at the upper part, where two slender prolongations marked the position of the Fallopian tubes. It was hollow, and had thick, tough walls, within which the thumb could be introduced with ease. Its lower part was contracted, and showed very plainly the mouldings of the os uteri: its structure was composed of greyish yellow fibrine, stained with blood.—*Med. Times and Gazette, Dec.* 4, 1852, *p.* 566.

111.—CASES OF COMPLICATED POLYPUS UTERI, WITH REMARKS.

By Dr. Francis H. Ramsbotham.

The term "polypus uteri" has been given at different times to organic diseases of the uterine structure, as well as to formations, within the uterine cavity, of very various and dissimilar kinds; and even now, though it is restricted to tumours attached by vascular connexion to the uterine substance, the phase is applied to more than one variety of morbid growths. Some are dense, firm, and compact, in their structure; some soft and cellular; some of a florid scarlet; some of a deep peony colour; and some, when removed, almost white. They take their origin also from different parts of the organ,—the fundus, the body, the internal channel of the neck, or the outer circle of the mouth itself.

Dr. Lee, in his essay in the nineteenth volume of the "Medico-Chirurgical Transactions," has noted four distinct species of polypus uteri, none of them malignant in their nature:—the fibrous;—the follicular or glandular, which he describes as a morbid enlargement of the *glandulæ Nabothi;* and which, consequently, are situated only at the mouth or neck;—the cystic or cellular, made up of a congeries of small vesicles or cysts, containing a fluid more or less transparent, and yellowish in colour. This variety is formed just beneath the lining membrane of the uterus, and springs from every part of the cavity. The tumour is highly vascular; and the cysts composing its chief bulk are bound together by fine fibrous tissues;—and, lastly, the mucous, which does not grow to so large a size as either of the others, and which seems to be produced by a morbid change in the mucous membrane itself, and to be analogous to the polypous tumours sometimes formed within the nose and other mucous cavities.

Of these the fibrous polypus is certainly the most common; and by some pathologists it is regarded as the true fleshy tubercle, specimens of which are so often met with embedded within the uterine walls, or projecting as nodules into the peritoneal cavity, or attached to the external surface of the organ by processes more or less slender, and invested by an extension of the peritoneal membrane. It is supposed, that, if these tubercles are deeply embedded within the uterine tissue, they merely increase the size of the organ, and give an irregularity to its form; but that, if they are situated nearer to the mucous membrane, they project towards the cavity; carry a layer of uterine fibres, as well as an extension of the mucous membrane, before them; and in their growth, encroaching more and more upon the cavity, assume the pear-like shape peculiar to most polypous tumours; and, finally, dilating and passing through the os uteri, so that they gradually protrude into the vagina, until their chief bulk is enclosed within the canal.

Gooch, in speaking of the fibrous polypus, says, that "their internal structure in most cases exactly resembles the internal structure of the large white tubercle of the uterus, commonly called the fleshy tubercle;" while Baillie says, that "a person looking on a section of the one and the other could not distinguish between them."

In a paper by Mr. Pollock, read before the Medico-Chirurgical Society on January 13th of the last year, that gentleman stated that the records of St. George's Hospital show, that out of 39 cases of fibrous tumours of the uterus, 38 were connected with the walls of the uterus, either embedded within them or pendulous therefrom, and one was attached to the cervix uteri; that in one case two tumours projected into the cavity of the peritoneum, and, being only connected to the uterus by thin, long pedicles, were readily moved in the abdominal cavity; while eleven projected into the cavity of the uterus. In six of these latter the tumour was single; one was very large and without a pedicle, and three were pendulous. In five of the cases where the projection was internally, there was more than one tumour, the others being embedded in the uterine substance; and two of them, having protruded through the os uteri into the vagina, were extensively ulcerated. All these eleven tumours would be classed under the generic term of polypus; and, whether we consider every fibrous polypus a variety of, and identical with, the fleshy tubercle or not, this table, as well as other observations, proves that the true fleshy tubercles of the uterus do actually not unfrequently protrude internally, as well as on the outer surface, appearing even as a tumour in

the vagina; that sometimes they are connected by a narrow neck to the uterine structure; and that at others they merely bulge as it were inwards, carrying the mucous membrane which lines the uterus before them, a great portion of their substance continuing still embedded within the uterine parietes. Under either of these circumstances ulceration is liable to take place in their investing membrane, hemorrhage to occur, and indeed all the symptoms that usually accompany polypus may be developed in succession. If they are attached by a pedicle they form one species of polypus, and may be removed by the same means that would avail us in the treatment of that disease; if their base is broader and deeply seated in the uterine walls, they are not so much under command; and it is most likely that in time they will destroy life by giving rise to hemorrhage and other debilitating drains. —*Med. Times and Gazette, Jan.* 22, 1853, *p.* 86.

112.—*On the Ligature in Polypus Uteri.* By Dr. Francis H. Ramsbotham.—[In all the cases in which Dr. Ramsbotham has operated, it has been with the straight double canula, commonly known as "Dr. Gooch's polypus canula." He has generally used whipcord as a ligature. He at first used that peculiar kind of silk called "dentist's twist," but found that it stretched, and so used the former in preference. On the continent the knife is preferred to the ligature; and Dr. Simpson states that he always uses a curved knife. With regard to the application of the ligature, Dr. Ramsbotham remarks:]

The only danger in applying the ligature is the possibility of including within its grasp either the neck of the uterus or some of the healthy structure of that organ, near to where the polypus arises. The latter mischance, indeed, might easily occur, if that part of the uterus which gives origin to the tumour were drawn down, indented, and partially inverted, as sometimes happens when the attachment is towards the fundus. This may be obviated by surrounding the tumour at some distance below its attachment; for it fortunately happens that that portion of the stem left in connexion with the uterine structure will decay and wither, and come away in shreds, or will be absorbed, after the separation of the chief bulk of the mass has taken place. The sensation of pain experienced by the woman on tightening the string will be our best guide to determine whether we have embraced any part of the uterus itself; if she complains much, suspicion should be awakened, the noose relaxed, and again drawn tight over a lower portion of the neck or body of the tumour. We shall run no risk of including the cervix uteri, if we are careful to carry the points of the instrument within the mouth of the womb, provided it be necessary to pass them up so high.—*Med. Times and Gazette, Dec.* 4, 1852, *p.* 562.

113.—*On the Uterine Mucous Membrane.*—Kilian maintains the existence of a mucous membrane in the human uterus; it is more developed in the adult than in the young, and has a very considerable thickness; it possesses utricular glands, and is clothed with an epithelium, which, in the neck and in the neighbourhood of the vaginal orifice, is furnished with vibratile cells. He is further of opinion, that the ciliated epithelium exists in the body of the uterus also, of which he has assured himself by examination of the uterine membrane in a rabbit, after the commencement of gestation. (It is not stated distinctly that cilia were observed in the human uterus.)

The augmentation in volume of the gravid uterus depends on the increase and multiplication of its elements. It is composed of fibres of gelatinous appearance, lightly striated in the longitudinal direction, often granular, and strongly adherent to each other, with distant nuclei. These fibres grow during the entire period of gestation, the nucleus finally becoming changed into a fibrinous filament. The division of the fibres into fine parallel fibrils, as described by Henle, this author thinks the result of preparation. Kilian recognises two such muscular layers. He has also described papillæ on the neck of the uterus. In studying the changes in the uterus after expulsion of the fœtus, he has observed the muscular fibres less

coherent, filled with fatty granules, and remarkable for the extreme paleness of their nuclei.—*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 545.

114.—*Apparatus for Premature Infants.*—Dr. Channing, in an account he is publishing of his visits to various European Hospitals, describes an apparatus he saw in use at the Maternité of St. Petersburgh, the use of which might be advantageously extended. "It was a species of cradle, without rockers, into which infants are placed when prematurely born, or when imperfectly developed, and for whom a steadier and higher temperature is required than that of the atmosphere. It is made of brass, and is everywhere double; a space being left between the two plates comprising it, with openings, into which warm water may be poured, and others for drawing it off when cool. A soft bed, and a properly arranged canopy, when needed, complete the apparatus."—*Boston Med. Journ.*—*Brit. and For. Med. Chir. Review, April*, 1853, *p.* 566.

115.—TREATMENT OF CHRONIC ABSCESS OF THE BREAST AND MILK FISTULÆ.—EMPLOYMENT OF IODINE INJECTIONS.

Under the care of John Birkett, Esq., at Guy's Hospital.

[It is well known, that, as a result of neglected milk abscess, the breast becomes affected with solid œdema, and that the sinuses, usually running in several directions through and behind the gland, are most difficult to close.]

The remedies usually employed, are, as it is well known, support to the part, and the laying open freely of the sinuses, or the injection of them with various irritating fluids. Mr. Birkett's treatment consists in the employment of iodine taken internally, applied as an ointment over the tumour, and used also as an injection for the sinuses, whilst at the same time the part was carefully supported and subjected to gentle pressure by means of a bandage. The power of iodine, as a means of exciting the absorption of inflammatory products, is well known; and, as an application to the lining membrane of sinous abscesses, it has for some time been employed on the continent, and, less generally, in this country also. The success which has attended Mr. Birkett's method of treatment has been, as the following case will show, most encouraging.

Elizabeth Wiles, aged 26, the wife of a farm labourer, was admitted January 6th, 1853. Three years ago, while suckling, she suffered what, from her description, would appear to have been an attack of acute inflammation, both of the left mammary gland, and of the surrounding structures. Her child was then eleven months old, and the disease appeared to have been excited by inflammation of the lymphatics of the arm from a sore on the finger. It was so severe as to confine her to bed for ten weeks, and to necessitate the employment of great numbers of leeches. It ultimately subsided considerably without having occasioned any abscess. The swelling, however, never quite disappeared, but after a time it again began to increase; and, a year subsequent to the first attack, a large chronic abscess had to be opened, which never afterwards healed. In September, 1852, she was again confined. The disease of the breast having resisted the persevering treatment of several practitioners in the town where she lived, and her constitutional powers being evidently very much reduced by the long-continued and profuse discharge of pus which it produced, she was ultimately recommended to come up to town, in order to have Mr. Birkett's opinion as to the propriety of excision. On admission, she was emaciated, and of a somewhat hectic appearance; the discharge from the sinuses was very profuse, and the whole breast much indurated. She was then suckling with the right breast.

Mr. Birkett advised her to wean her infant, and ordered her to be confined to bed, with a poultice over the part for a few days, until the state of excessive irritation which appeared to exist had somewhat subsided. He then prescribed for her the following mixture:—

℞. Potassii iodidi gr. iij., infus gen., ℥ j., ter die sumend.

The breast to be wrapped in lint, spread with ung. plumb. iod.; and the whole

supported by a bandage carried round the shoulder. On the 23rd, the symptoms having already begun to amend, the injection of all the sinuses with the tincture of iodine (London Pharmacopœia) was performed by means of a tube carried to the end of the sinus. The treatment as above was persevered in, and after the expiration of a week the injection was repeated, and again after another space of two weeks. At present, March 15, the sinuses are quite healed; the gland has been reduced very nearly to its natural size, and the patient has gained in general health to a point beyond what she has enjoyed since the commencement of the disease. With the exception of the first few days, she has been allowed to be out of bed the whole time, and full diet has been allowed her. On each occasion that the injection was used, it produced considerable smarting pain, and was followed by a temporary increase of swelling and discharge, which very quickly subsided.

We scarcely need point out the advantages of the above plan of treatment over the old method of laying open the sinuses. In the latter the incisions have to extend wide and deep, and they involve considerable hemorrhage, and for a time increased constitutional irritation and great discharge of pus. Other cases of a similar nature lately under Mr. Birkett's charge, in which the iodine cure had been practised, were the result of common milk abscess, from which the above, as will be seen, differs in some particulars.

Prevention *is* better than cure, and, as we believe there are few diseases more thoroughly within the reach of prophylactic measures, than is milk abscess, we cannot dismiss the subject without saying a few words on that head. The history of this disease is in most cases easily told. A woman of delicate skin is confined, perhaps for the first time; lactation commences, the cuticular investment of the nipple, irritated by the mouth of the child, becomes cracked and fissured, each application of the infant to the breast occasions torment to the mother, and she avoids it as much as possible. The child is allowed to suck only on the sound side, the milk accumulates in the other breast, and slight inflammation is set up, to be aggravated by the increasing dread on the part of the patient of the natural method of relief, the evacuation of the milk. An abscess is the result. Now, how was all this to be avoided? In most cases pregnant women consult their medical advisers on sundry little points some time before their confinements. Let him on these occasions inquire as to the state of the nipple; and should the skin be found to be delicate, the daily application to the part of an alum wash, decoction of oak bark, or some other astringent, should be recommended. By such means the skin may be hardened, tanned in fact, and rendered just as capable of resisting irritation as that of the finger. In other cases milk abscess depends on the non-development of the nipple. The surgeon should take care that a shield be provided beforehand, and that his patient knows how to use it properly.

But, supposing that, with the greatest care, abscess has proved unavoidable, there are still measures by which the disease may be prevented from passing into the deplorable condition in which we have noted that the patient in the above case came into Mr. Birkett's hands. We have repeatedly heard Mr. Paget observe, that, among his out-patients at St. Bartholomew's, he never has any opportunity for trying the various vaunted injections for the cure of sinuses in the breast, because the latter always heal of themselves. We have very carefully watched Mr. Paget's practice, in which mammary abscesses are very common, and can most fully confirm this statement. His treatment consists in the free evacuation of all collections of matter, and in the internal exhibition of tonics. A generous diet of meat and beer, with full doses of quinine or iron,—such are the remedies under which improvement in the local and general condition of the patient seldom fails to become rapidly manifest. It must, however, be admitted that the applicants, as out-patients, do not include a small class of peracute cases in which the symptoms are often too severe to allow of the patient's leaving her bed. The systematic avoidance of antiphlogistic measures in the treatment of local suppurative inflammations is daily becoming more and more common, and in no respect has modern practice more strikingly advanced than in this. It affords, too, a good illustration of the application of minute pathological research to actual every-day practice. Those of our readers who had the good fortune to hear Mr. Paget's lectures on inflammation, delivered before the College of Surgeons three years ago, will remember how unwillingly the Professor admitted the existence of any increase in formative power in that condition.

This view, founded as it was on theoretic reasoning, and microscopic observation of the process, has since been advocated by other pathologists, including some of the German school, and it is interesting to observe how, upon empirical recommendations merely, the line of practice which it would suggest is rapidly coming into vogue.—*Med. Times and Gazette, April* 2, 1853, *p.* 347.

116.—PERFORMANCE OF TRACHEOTOMY IN A CASE OF UTERINE EPILEPSY.

Under the care of Dr. TYLER SMITH.

[Dr. Marshall Hall's investigations have rendered the treatment of epileptic seizures by tracheotomy sufficiently public; *laryngismus* being one of the symptoms especially calling for relief. In the following case of Dr. Tyler Smith's, the attack originated from derangement of the uterine function.]

Sarah B——, the wife of a gamekeeper, at Debden, in Essex, was admitted into this hospital on the 13th of Jan., 1853. The patient has had four children, and has been the subject of epilepsy of the most severe character, from the appearance of puberty. At this time she acted as nurse to a child who suffered severely from fits, and it was supposed that this circumstance had some influence in causing the first fits which occurred to the present patient. For some years the fits occurred with great regularity at each catamenial period, as many as twenty seizures frequently occurring before and during the menstrual flow. Of late she has menstruated scantily and at irregular intervals, but the fits have pretty generally attended the periodical discharge. The attacks of convulsion were preceded by screaming, after which she would be violently thrown down, and the respiration so arrested by laryngismus, as to produce frightful lividity of the head and face. This poor woman had been reduced, by the long continuance of her malady, to such a state of fatuity as to be quite unable to attend to her domestic affairs, and, in several instances, violent mania had followed and preceded the seizures. On two occasions she has been confined as a lunatic. Her head and face bear the marks of many wounds produced by falls at the onset of fits. In 1850, she suddenly fell in a fit across a bed in which her child, an infant of seventeen months old, was laid, and killed it on the spot. Her husband was absent half an hour, and when he returned found his wife nearly insensible by the side of the dead infant.

There could be no question, therefore, that this was one of the gravest instances which could occur of this terrible disease. The patient was not considered a fit subject for permanent abode in an asylum, but in her own cottage she was a source of constant danger to herself or others. We proceed to give a detail of her case from the date of her admission to the present time.

Jan. 19th, or sixth day after admission.—The catamenia were present, and she had one fit, but not of a very severe character.

Twelfth and thirteenth days.—After the catamenia had ceased, she had a fit each day. These fits were severe, and she was thrown violently to the ground, but they were not of long duration. She had a fourth fit eight days afterwards, and on the following she had two others. Single fits followed on every third day after this, so that during the month which she passed in the hospital before the operation nine seizures occurred.

After the patient had passed one month in the hospital, Feb. 13th, tracheotomy was performed by Mr. Lane. An instrument was used on this occasion, contrived by Mr. Thompson, late of University College, which opens the trachea by a double lancet, piercing the tube horizontally between the tracheal rings. In ordinary cases this instrument would have the advantage of opening the trachea by one incision, without dividing the rings, but in this case the integuments were first divided, as the woman suffered from an enlarged thyroid gland. The puncture of the windpipe immediately produced tracheal cough, and whistling respiration began at once through the aperture. Very little blood was lost, and that which passed down the trachea was readily coughed out through the tube. Chloroform was used, and during the early part of the anæsthesia the limbs were rigid and convulsed, but the spasm passed away after the puncture of the trachea, and she did not have

a perfect fit. The patient was now placed in a warm situation in her ward, and a gauze cravat put round her neck. No inflammation of the trachea, or other ill consequence followed upon the operation.

Two days after the opening of the windpipe she became restless and disturbed in the night. Heat of skin, raised pulse, and furred tongue were present on the next day, and she was very unruly. In the evening she threw the medicine-glass at the sister of the ward. Dr. Tyler Smith prescribed a febrifuge and an active aperient, and on the subsequent evening the catamenia appeared. During the two whole days previously, she had been so incoherent as to require constant watching. On several occasions she pulled the inner tube out of its place; but during this time she had nothing like a fully-formed convulsion. After the appearance of the catamenia, the cerebral disturbance subsided, and she has since remained collected and rational. The last fit was that which occurred the day before the operation.—*Lancet, March 5*, 1853, *p.* 224.

117.—NEW GALVANIC BATTERY.

By Mr. Stringfellow.

[The inventor exhibited this galvanic battery before the members of the Royal Medical and Chirurgical Society.]

One of the chief merits of this instrument is its compactness and portability, being contained in a morocco case not larger than a lady's card-case. It is a flat plate, composed of zinc and copper in a manner somewhat similar to Pulvermacher's galvanic chains. The battery is formed by a number of compound bars or plates arranged in a series, and its strength may be graduated by the number of bars. Twenty-two bars thus arranged will communicate a decided shock, and develope an unintermitting galvanic current, by the continued application of which cauterization of the skin may be effected. Six bars furnish a current sufficiently powerful to decompose water, as may be seen by placing the conducting wires of the battery in communication with those of a decomposing bottle filled with water. Mr. Wood, of St. Bartholomew's Hospital, has ingeniously applied this decomposing power of the instrument to discover the presence of albumen in urine, and it constitutes a very beautiful and ready means of detecting it, even in highly acid urine, or in urine where the presence of a large quantity of urate of ammonia causes a precipitate of a non-albuminous character to be thrown down by nitric acid. The galvanic current evolved affords, moreover, an unintermittent stimulus, and this quality renders it available for physiological experiments, by which the properties of nerve or muscular fibres are submitted to investigation. Pocket batteries may be constructed of sufficient power to restore suspended animation, whether resulting from asphyxia or other causes, and we think Mr. Stringfellow's battery will be found a valuable and convenient instrument, both for therapeutical and chemical purposes in medicine.—*Lancet, March 5*, 1853, *p.* 233.

118.—ON FIBRO-PLASTIC TUMOURS.

By M. Lebert.

M. Lebert, the author of the well-known work on Cancer, lately read a paper before the Surgical Society of Paris, on Fibro-plastic Tumours. The principal facts and conclusions brought forward by M. Lebert are the following:—

1. Fibro-plastic tumours are composed of a cellular texture of new formation, similar to that seen in embryonic life. Fibro-plastic tissue may have an inflammatory origin, it may be the result of hypertrophy, or arise quite spontaneously.

2. Fibro-plastic tumours are made up of a soft lobulated tissue, of a pinkish yellow; or else of a firmer texture, of a pale hue; and more homogeneous; or, finally, of a mixture of a gelatiniform substance with the two structures just mentioned. These tumours are situated in the skin, or the subcutaneous areolar tissue; they may be buried in the depth of the muscular masses of a limb, especially the thigh; or else they may spring up in bone, a favourite seat being the jaws; or finally, they may grow upon the meninges.

3. Fibro-plastic tumours present the same characters in man and in domestic animals.

4. The fibro-plastic texture, which owes its origin to inflammation, has a marked tendency to fibrous transformation; it is often met with in protracted inflammations, of which it is at the same time the support and the produce.

5. Fibro-plastic tumours present either a smooth or lobulated surface, and are either globular or flattened, according to their seat, and in cases of hypertrophy they assume the shape of the affected organ. They are generally free and well-defined, but when springing from bone they are sessile, and look like excrescences.

6. These tumours may become very large, both in glandular organs and when seated on limbs, especially when they contain much gelatiniform tissue. They are generally surrounded by a fibro-cellular envelope. When a section is made in a recent case the liquid obtained is clear and transparent; but it is sometimes thick and dull, when flocculi or entire lobuli are suspended in it. Besides the textures above-mentioned, there is sometimes found in the tumours a substance of a pale yellow, and quite dull; sometimes calcareous concretions are found, or else osseous radiations, when the disease began in the periosteum.

7. Under the microscope, cells with small, rounded, or ovoid nuclei are seen, and all the forms intermediate between the cell and common fibre, especially a great many narrow fusiform bodies; the nucleoli are always very small. There are also perceived original cells with compound nuclei rolled up together, and sometimes fusiform nuclei which then constitute fibro-plastic masses.

8. As regards neighbouring textures, fibro-plastic tumours grow like fibrous tumours, as they press upon these textures without taking their place; whilst cancerous tumours substitute themselves in neighbouring parts. Fibro-plastic tumours follow, as to their growth, the following development:—There is first a local deposit; the increase is then slow, but soon becomes rapid; phlegmasia takes place; then come hemorrhage, partial calcification, softening, the formation of cysts, partial ossification, ulceration, and then, in exceptional cases, sloughing.

9. Both sexes are obnoxious to these tumours; they are seen at all ages; but they arise more frequently between thirty-five and fifty years.

10. Recurrence after operation takes place, especially in autogeneous tumours, and has not been observed in fibro-plastic hypertrophy; recurrence is not observed, as in cancer, to arise in distant organs, though it is often caused by an incomplete operation. Notwithstanding the occasional pertinacity of fibro-plastic tumours to recur in the cicatrix, they are not found to injure the general health. In very rare cases a kind of fibro-plastic diathesis becomes established; this fact has, however, been observed with fibrous, adipose, neuromatous, and melanetic tumours.

11. Singleness and a strictly local nature have been observed as a rule in fibro-plastic tumours. This fact is proved by twenty-six carefully conducted autopsies of cases in which the disease had reached its natural termination, and also by a considerable number of perfect and permanent cures after operation; whilst no such cures are known to exist respecting true cancer.

12. Fibro-plastic tumours have a much more chronic character than cancerous tumours; and save a few cases of very rapid growth, it may be said that fibro-plastic tumours, when they become fatal, last rather more than between five and ten years; whilst the natural duration of cancer is from two to two years and a half. Cases have even been known, and are not rare, in which fibro-plastic tumours have lasted twenty years and more, without much inconvenience. It should, however, be mentioned that these tumours, after a very slow progress, have rapidly assumed a very serious character.

13. Pain is very rarely acute and permanent, and is mostly, as in other tumours, of a neuralgic kind. Functional disturbance depends principally on the seat of the tumour. The general health, in the great majority of cases, remains undisturbed, except in the very rare cases of general fibro-plastic infection, or those in which the local affection has ended in extensive ulceration.

14. The prognosis of fibro-plastic tumours is much more favourable than that of cancer. Curability is the rule. The fibro-plastic texture of inflammatory origin is the more likely to be benign the more it shows a tendency to assume a fibrous character. The prognosis is, in fibro-plastic hypertrophy, likewise favourable. In fact, these tumours constitute a local affection little or not at all likely to recur,

which can only become dangerous in so far as its seat, extent, or amount of ulceration are concerned. Kelis is likewise an affection of a simple kind, notwithstanding its pertinacity regarding recurrence in the cicatrix after operation. Fibroplastic tumours of spontaneous origin are very likely to recur after excision, when they are situated on the tegumentary surface, under the skin, or in the bones. The surgeon should always bear in mind the possibility of general infection, only, however, as an occasional occurrence, but not as a probability. Fibro-plastic tumours seated in the meninges destroy the patient by interfering with the functions of the brain, though remaining all the while a perfectly local affection.

15. The treatment of these tumours should begin with the prolonged use of preparations of iodine, when the origin is of a syphilitic nature, or when the tumour is simply owing to hypertrophy. When an operation is necessary, it should consist, as a rule, of complete extirpation; strong caustics should be tried with superficial tumours of small dimensions. Operations in such cases should always be performed boldly, whether the knife be carried into soft parts, or whether the affection be seated in bone. Amputation should be performed when the tumour is situated in the depth of the limb and the former sends prolongations into parts where dissection is difficult.

Autoplasty should be used to substitute healthy tissues to cicatrices likely to favour recurrence, in operations of a moderate extent, and the tumour is seated on the surface. The actual cautery is necessary when superficial tumours are too extensive to admit of autoplasty.

It is finally advisable to use iodine *after* operations, as a prophylactic means against recurrence or general infection.—*Lancet, Feb.* 26, 1853, *p.* 203.

119.—ON THE COMPOSITION OF HUMAN MILK IN HEALTH AND DISEASE.

By MM. Vernois and A. Becquerel.

Looking at the contradictory reports of various analyses of milk, MM. Vernois and A. Becquerel have entered into an elaborate investigation of the entire subject. They have especially chosen 89 uniform and complete analyses to deduce certain deductions from. The following is their account of the composition of this fluid:

	In Health.	In Acute Disease.	In Chronic Disease.
Water	889.08	884.91	885.50
Solid parts	110.92	115.09	114.50
Sugar	43.64	33.10	43.37
Caseum and extractive	39.24	50.40	37.66
Butter	26.66	29.86	32.57
Salts (by incineration)	1.38	1.73	1.50
Density	1032.67	1031.20	1031.47

There are more solid parts in the milk of nurses aged from 15 to 20, than in those of from 35 to 40. The quantity of butter is notably increased during the colostral period. Gestation does not induce alteration in the composition of the milk at first, but at a later period it increases the proportion of solid parts. Menstruation diminishes the density, the weight of the water, and of the sugar. It increases the weight of the solid portions, especially the caseum. Insufficient aliment renders the milk too watery, the effect falling especially on the butter and caseum. An excess of butter or caseum always accompanies an ill state of health of the nursling. There are certain women whose milk, independently of any special cause, always contains an excess of butter or caseum.

In both acute and chronic disease the water diminishes and the solid parts increase; but there the analogy between these two classes ceases. In acute disease, the sugar considerably diminishes, while the three other elements are increased, the caseum alone nearly repairing what is lost by the sugar. In chronic disease, the butter and salts are increased, the sugar remains stationary, and the caseum diminishes. Thus, in acute diseases, we have loss on a respiratory element, and excess in a nutritive element; and in the chronic, loss on the nutritive element, and increase of the respiratory element. In phthisis, without diarrhœa or emaciation,

there is little sensible modification; but these being present, there is considerable diminution in the weight of butter. In syphilis the density is extraordinarily raised; the butter diminishes, and the salts disproportionately increase.—*Gazette Médicale*, 1853, No. 5.—*Brit. and For. Medico-Chirurgical Review*, *April*, 1853, *p.* 558.

120.—ON THE PATHOLOGY AND TREATMENT OF LEUCORRHŒA, BASED UPON THE MICROSCOPICAL ANATOMY OF THE OS AND CERVIX UTERI.

By Dr. Tyler Smith, Physician-Accoucheur to St. Mary's Hospital.

[Dr. Tyler Smith first thanks, in his memoir on this subject, Dr. A. Hassall for his valuable assistance, without which, he says, he could not have prosecuted his researches.]

The mucous membrane of the os and cervix uteri, like the mucous membrane of other parts, consisted of epithelium, primary or basement membrane, and fibrous tissue, blood-vessels, and nerves. But as there were some special characteristics pertaining to this tissue, he proposed, for the convenience of description, to examine, first, the mucous membrane of the os uteri and external portion of the cervix; and, secondly, the mucous lining of the cervical cavity or canal. The epithelial layer of the former of these situations was tesselated or squamous, and so arranged as to form a membrane of some thickness: by maceration, it could be easily detached, and it was then found closely to resemble the epithelial covering of the vagina, with which it was continuous. Beneath this epithelial layer was the basement membrane, covering numerous villi or papillæ, which studded the whole surface. Each villus contained a looped blood-vessel, which, passing to the end of the villus, returned to its base, and inosculated with other blood-vessels of the contiguous villi. These villi had been mistaken for mucous follicles, usually described as covering the surface of the os uteri; but the microscope failed to discover any distinct follicular structure in this situation. When a thin section of the surface of the os uteri was examined by a low power, the points of the villi could be seen as dark spots through the epithelial layer. A careful examination exhibited these spots as slightly depressed in the centre, yet nevertheless slightly elevated in their margins, nipple-shaped, and containing red points, which were the terminations of the looped blood-vessels. These appearances were produced by the villi being obscured by their epithelial covering. The thick layer of scaly epithelium, and the villi with their looped vessels, were the principal anatomical features of the mucous membrane of the os and external part of the cervix uteri; and these structures played an important part in the pathological changes which occurred in the lower segment of the uterus in leucorrhœa. Between the margin of the lips of the os uteri and the commencement of the penniform rugæ, within the precincts of the cervical canal, a small tract of smooth surface was usually found, which, to the naked eye, seemed of more delicate structure than the neighbouring parts, and when examined by the microscope was found to be composed of cylinder epithelium, arranged after the manner of the epithelium covering the villi of the intestinal canal. The cylinder epithelium covered in this situation villi two or three times larger than the villi upon the surface of the os uteri—so large, indeed, as to be visible to the naked eye when viewed by transmitted light. Within the cavity of the cervix uteri, the mucous membrane contained four columns of rugæ, or folds, arranged in an oblique, curved, or transverse direction; and between these columns were four longitudinal grooves. The two sulci in the median line, anteriorly and posteriorly, were the most distinct; and of these, the sulcus of the posterior columns was the most strongly marked. In the normal state, the transverse rugæ, with the fossæ between them, were filled with viscid, semi-transparent mucus; and when this was brushed away, a reticulated appearance, caused by numerous secondary rugæ, was visible. The author gave a very minute description of these four rugous columns, and the furrows between them, which was illustrated by some very beautiful drawings of the cervical canal, displaying the rugous columns and fossæ of the natural size, and magnified nine and eighteen diameters. The latter power showed a large number of mucous fossæ and folli-

cles, crowding the depressions between the rugæ, and the rugous elevations also. The author mentioned that a healthy virgin cervix, of normal size, contained at least ten thousand mucous follicles. This anatomical arrangement secured a vast extent of superficial surface, which was still further increased by the presence of villi similar to those found in the lower part of the cervix: they were found in considerable numbers on the large rugæ and other parts of the mucous membrane in this situation. By this disposal of the mucous membrane of the canal of the cervix, a very large extent of glandular surface was obtained for the purposes of secretion. In effect, the cervix was an open gland; and, in the opinion of the author, it was in this part of the utero-vaginal tract that the principal seat of leucorrhœa would be found to exist. There was an analogy here which should not be lost sight of, bearing, as it did, on the pathology and treatment of leucorrhœa, which was, the great similarity which existed between the skin and the mucous membrane of the vagina and the external part of the os and cervix uteri. The resemblance in these situations, was certainly much nearer to the cutaneous structure than to the mucous membrane of more internal parts. These analogies were strongly confirmed by what was observed of the pathological conditions to which these parts were liable, and by the effect of therapeutical applications. The author dwelt on the fact that the epithelium of the os uteri and external portion of the cervix was constantly squamous, and that the epithelium immediately within the os uteri was cylindrical but not ciliated, but that in the rugous portion of the cervical canal the cylindrical epithelium became ciliated. The mucus secreted by the glandular portion of the cervix was alkaline, viscid, and transparent; it adhered to the crypts and rugæ, so as to fill the canal of the cervix. It consisted chiefly of mucus-corpuscles, oil-globules, and occasionally dentated epithelium, all entangled in a thick, tenacious plasma; it was remarkable for its tenacity; while the mucus found in the lowest part of the canal was thinner in appearance. There was an essential chemical difference between the vaginal mucus and the secretion of the interior of the canal of the cervix; the first was always acid, and the latter invariably alkaline. Mr. Whitehead, of Manchester, had noticed this fact, and the observations of the author confirmed his views. The acid of the vaginal secretion was more than sufficient to neutralize the alkaline secretion of the cervix, and when any secretion from the cervical canal entered the vagina it became curdled from the coagulation of its albumen. It was worthy of note, that that part of the mucous membrane of the uterus and vagina which resembled the skin was the only part which, like the skin, furnished an acid secretion. The vaginal mucus was a simple lubricatory fluid. But the uterine cervical mucus had other uses besides that of lubrication; in the healthy condition, in the intervals of the catamenia, it blocked up the passage from the vagina to the fundus; it thus defended the cavity of the uterus from external agencies, and from its alkaline character afforded a suitable medium for the passage of spermatozoa into the uterus. Having stated his views of the structure of the utero-vaginal mucous membrane, the author expressed his opinion that the glandular portion of the cervix uteri was the chief source of the discharge in leucorrhœa. Leucorrhœa, in its most simple and uncomplicated form, was the result of an increased activity of the glandular portion of the cervix. A follicular organ, which should only take an active condition at certain intervals, became constantly engaged in secretion. Instead of the discharge of the plug of mucus at the catamenial period, an incessant discharge was set up. At first the discharge was but an unusual quantity of the elements of the healthy mucus of the cervix. The quantity increases, and becomes a serious drain to the constitution, and the glandular cervix in some cases becomes so excitable, that any unusual stimulus, even mental emotions, provokes an augmentation. The author next referred to the conditions under which the epithelium of the os and external part of the cervix uteri and upper portion of the vagina might be partially or entirely removed. The mucous membrane then presented an intensely red colour, from the presence of the naked villi, and an appearance of roughness or excoriation presented itself. He thought that among the causes which produced this aspect of ulceration were eruptive disorders, similar to herpes or eczema, which strongly marked the analogy between this tract of mucous surface and the skin. He had observed cases in which an occasional herpetic eruption upon the os uteri always produced herpes præputialis in the husband. But the most frequent cause of

denudation arose from the alkaline mucous discharge of the cervix irritating the acid surface of the os uteri, and causing the rapid shedding of the epithelium round the margin of the os. A microscopical examination was given of the various discharges met with in these affections, in making which the author was assisted by Dr. Handfield Jones and Dr. Hassall. In cervical leucorrhœa, the discharge consisted of quantities of mucus-corpuscles, and in severe cases pus-corpuscles and blood-discs, with fatty matter, involved in a transparent plasma. The epithelial débris is constantly present, but in limited quantity. In vaginal leucorrhœa, including the secretions of the external portion of the os and cervix uteri, the plasma is opaque, and contains myriads of epithelial particles in all stages of development, with pus and blood globules when the villi are affected. When a circumscribed ulcer is visible upon the os uteri to the naked eye, after death, such as occurs in eruptive affections of the os and cervix, and is examined by the microscope, with a low power, it is found to consist of a base from which the villi are entirely removed, or in which only the scattered débris of villi remain; and surrounding this base there is a fringe of enlarged villi, partially or entirely denuded of epithelium. The character of the so-called ulceration of the os uteri was detailed, and the nature of the discharge described. The author then observed that if any division of leucorrhœa were made, two principal forms must be recognised:—

I. The *mucous* variety, separated by the follicular canal of the cervix.

II. The *epithelial* variety, in which the discharge was vaginal.

With respect to the so-called ulcerations of the os and cervix, two kinds of morbid change would be observed—

1. *Epithelial abrasion*, by far the most common, in which the epithelium alone was deficient.
2. *Villous abrasion*, *erosion*, or *ulceration*, in which the villi are affected by superficial ulceration.

It was to the villi, denuded of epithelium, and partly eroded, that the marked forms of granular os uteri were owing. The ovules of Naboth, often referred to by writers as obstructed follicles, the author had found to be in reality an eruptive disease of the mucous membrane analogous to a cutaneous affection. In these affections of the cervix uteri it frequently happened that the cervix uteri was partially everted, and the deep-red surface covered by vascular villi thus exposed, had frequently been mistaken for breach of continuity in the mucous surface. The author then offered some remarks on the practical deductions which might be drawn from the present investigation. The glandular structure of the parts from whence the leucorrhœal discharge arose pointed to the influence of constitutional causes, and exemplified why this affection should be so common in women of strumous habit and leuco-phlegmatic temperament: it vindicated the importance of constitutional treatment, and directed attention to the more rational employment of topical remedies; and it was evident that the profuse application of caustics, as recommended by the French school of uterine pathology, was both unnecessary and unscientific. He admitted that leucorrhœa of the cervical canal was sometimes cured by the use of caustics to the os uteri, but in these cases they acted as counter-irritants to the glandular structure. The indications of treatment, based on a knowledge of the minute anatomy of the os and cervix uteri, and the study of its pathology in leucorrhœa, appeared to the author to require constitutional medicines and regimen, with local applications. Local measures, to be of any use in cervical leucorrhœa, should be applied, not to the vagina, nor the os uteri, but to the canal of the cervix. In vaginal or epithelial leucorrhœa, common injections were serviceable; but in cervical or mucous leucorrhœa no benefit could result unless the injection passed into the cervix. He mentioned the methods he adopted to secure this result, and concluded by expressing a hope that the prosecution of these researches might prove serviceable, by rendering a troublesome class of maladies more intelligible than they had hitherto been, and by tending to correct errors of practice, and to indicate the just value of constitutional and topical remedies.

[Dr. Tyler Smith's paper was illustrated by a number of beautiful drawings, which excited great attention among the Fellows, representing the novel points described in the paper, and which were made under the superintendence of Dr. Hassall.—Ed. "Lancet."]—*Lancet*, *July* 3, 1852, *p.* 10.

121.—ON PUERPERAL CONVULSIONS.

By Caleb Rose, Esq., Swaffham.

[Mr. Rose first relates the histories of twelve cases of puerperal convulsions. Of these twelve, nine were primiparæ; of these eight were unmarried; of the remaining three, one was a third pregnancy, and the other two were twelfth pregnancies. In four cases, the convulsions followed the labour; in eight they preceded it; of these latter three children were born dead. In five cases, the urine, previously to labour coming on, had been albuminous. Mr. Rose proceeds:]

One striking fact in the history of puerperal convulsions is, that in a very large proportion of the cases recorded it was the first pregnancy, and many of the patients were unmarried women. It appears that there must be in primiparæ, particularly if they are unmarried, some powerful predisposing cause rendering them liable to the occurrence of convulsions. I believe this cause to be a peculiar state of the nervous system. A woman, in her first pregnancy, is apt to be irritable, mobile, and excitable; and it is very natural that she should be so; the novelty of the sensations incident to her situation, the dread of her approaching labour, and a degree of anxiety and apprehension as to its result, all tend to produce a state of erethism of the nervous system strongly predisposing to convulsions. This state, of course, is much more intense in some women than in others, and is likely to be more aggravated in an unmarried female, whose pregnancy subjects her to constant annoyance and vexations.

Looking upon this state of nervous erethism as the predisposing cause of the convulsions in the large majority of cases, some modification is necessary of the treatment generally recommended. I think that, in most cases, it is necessary to bleed, to obviate, in some degree, the effects of congestion; but, in this large class of cases, I do not think it is necessary or right to repeat bleeding after bleeding, simply because the convulsions continue; they are not very likely to cease until the uterus is empty, and, in all cases, time must be allowed before this can be safely accomplished. I have not had any experience of chloroform in these cases; but I should think it would often be very useful indeed, by suspending the convulsions while labour was progressing.

Diseased brain, intemperance, plethora, anæmia, uræmia, a state of nervous erethism, may all be considered to be predisposing causes of puerperal convulsions; but I think, with Dr. Tyler Smith, that the immediate cause of a convulsion is "the excited condition of an important class of the incident nerves of the spinal marrow,—namely, those passing to it from the uterine organs,—such excited condition depending upon pregnancy, labour, or the puerperal state." Sometimes a powerful emotion may produce a convulsion, occasionally, also, indigestible matters in the stomach, an accumulation of fæces in the bowels, or a distended bladder, may be the cause; but in the vast majority of cases the exciting cause is the before-mentioned condition of the uterine nerves.

In most cases, the main point in the treatment is to have the uterus emptied. The natural efforts will generally accomplish this; but, if labour makes but slow progress, and the convulsions are frequent, I think delivery ought to be accomplished by artificial means as soon as it can be done with safety. Turning, when the head is above the brim of the pelvis, the forceps, when it is within reach, are the best means to use. Perforation, except when the pelvis is much distorted and small, I should think, cannot be required in a state of convulsions.

The special treatment of the case then is, to empty the uterus,—the general treatment must depend upon what may have been the predisposing cause of the convulsions in each particular case.

After the uterus is empty, and the convulsions still continue, with the patient restless and the pulse quick and weak, I have seen the happiest effects follow the administration of a full dose of opium; the convulsions have ceased; the patient has fallen into a quiet sleep of some hours' duration, from which she has awoke comparatively well.

In Case 11, the convulsions ceased, and a thick, rigid os rapidly yielded, after giving a quarter of grain of ant. pot.-tart. every half-hour, with ten drops of laudanum.—*Med. Times and Gazette, July* 17, 1852, *p.* 61.

122.—CASE OF PUERPERAL CONVULSIONS FROM CEREBRAL CONGESTION, TREATED BY BLEEDING AND TARTARIZED ANTIMONY.

By J. B. Mawer, Esq., District Accoucheur to St. Mary's Hospital.

I was called in a great hurry, at nine in the morning of the 3rd of March, to visit Mrs. C. B——, a strong, muscular woman, of small stature, aged twenty-three, a patient of the St. Mary's Maternity, who was in labour of her first child. On entering the room I found her in one of the most fearful paroxysms of puerperal convulsions I had ever witnessed. The face was frightfully distorted, and purple from congestion; bloody foam was issuing from the mouth; the tongue was bleeding and protruded, the eyes fixed and staring; and several attendants were vainly endeavouring to restrain her in bed. Feeling that not a moment was to be lost, I instantly proceeded to take blood from the arm, by making a large orifice, from which, in a very short space of time, forty ounces of blood flowed. I then waited a few minutes, hoping that some good effects would follow so copious and sudden a loss of blood, but had the mortification to see no favourable change in the frightful character of the symptoms. I therefore removed my thumb from the opening in the vein, where I had with much difficulty managed to keep it during the violent struggles of the patient, and allowed thirty ounces more to escape in the same rapid manner. This second bleeding had at once a marked and beneficial effect, as the convulsions almost immediately ceased, a more natural expression of countenance returned, and she was shortly restored to a condition of apparent consciousness. I then removed most of her hair, and applied a bladder half filled with pounded ice to the head, and bottles of hot water to her feet. On making the usual examination, I found the os uteri about half dilated, but exceedingly rigid and tense, as were also the external parts. Just at this time I had the satisfaction of seeing my friend Mr. Musgrave enter the room, followed shortly afterwards by Dr. Tyler Smith, whom I had sent for immediately on perceiving the serious nature of the case.

There was now an almost entire absence of uterine pain. The abdomen was carefully manipulated, but no movements of the fœtus could be excited or detected, though its rounded mass could be felt within the uterus. The fœtal heart could not be heard upon auscultation, so that it was concluded that the fœtus was probably already dead. As there was a calm in the convulsions, it was resolved to delay the performance of turning or craniotomy until more imperatively called for. It was agreed that it would be desirable to rupture the membranes as soon as practicable, and allow the liquor amnii to escape, so as to diminish the uterine distension. As there was still much general excitement of system, the pulse numbering 110 in a minute, and hard, and the os uteri and other tissues continuing very rigid, in spite of the previous depletion, it was felt necessary to follow the antiphlogistic plan, and with that view it was decided to try the full effect of tartarized antimony, as the medicine best adapted to fulfil the indications required. Accordingly nine grains of the salt were dissolved in six ounces of the camphor mixture, and an ounce of this solution was administered every hour during the day; such was the tolerance of the remedy, that not even the slightest nausea was induced by it, but it had the happiest effect in softening and relaxing the previously rigid condition of the parts. The labour pains, which had been quite suspended for about four hours, returned gradually about one o'clock, and I availed myself of the first opportunity which offered to rupture the membranes, when about a pint of water flowed away. I may here mention, that, although no further convulsions occurred, she continued in a torpid and half-comatose state, the sense of vision especially being very imperfect. The uterine efforts became now strong and effective, but owing to the slow dilatation of the os uteri, the anterior lip was pushed down in front of the head in its passage through the pelvis, reaching almost to the os externum. I succeeded, however, at about seven in the evening, aided only by the natural efforts, in delivering her of a still-born female child, and having waited about twenty minutes, and no pain coming on, I extracted the placenta, which was partly in the vagina, and soon had the satisfaction of feeling the uterus well and firmly contracted. Dr. Tyler Smith saw her again with me in the evening, and a draught containing one-third of a grain of morphia and three grains of camphor,

was administered, which had the effect of calming the nervous irritability and restlessness, which had been for some time increasing. She slept profoundly the whole of the night, and, on visiting her next morning, I found her with a quiet intelligent smile on her countenance; her pulse 96 and soft; the skin moist and comfortable; the head free from pain, but feeling rather heavy; and having no recollection whatever of anything which had occurred during the previous twenty-four hours. I ordered her still to continue the ice-cap to the head, and to take a saline draught, containing a diminished quantity of tartarized antimony, every four hours.

On Friday, the 5th, she had a dose of calomel and colocynth, followed in a few hours by a draught of senna and salts, which cleared out the bowels very effectually. A purgative was afterwards exhibited every alternate day. She continued steadily to improve without a bad symptom, and I have the satisfaction to state that she soon perfectly recovered. The secretion of milk on the fourth day was very abundant, and proved rather troublesome for some short time.

I must not omit to notice, that, on testing the urine, I found in it no trace of albumen, nor was there any œdematous swelling of the legs—a fact of some importance in reference to the modern theory with regard to the nature of these congestive diseases of the brain, as it affords conclusive evidence that albuminuria does not universally obtain in these affections.

This case, I think, presents several other features of considerable interest to the practical obstetrician and to the profession generally. In the first place, it serves to confirm the imperative necessity of large and adequate depletion in the congestive variety of this formidable disease, affording at the same time ample proof of its undoubted safety and success. It also furnishes a remarkable example of the tolerance of tartar emetic—a fact long well established in reference to its use in pneumonia and some other pulmonary affections, but not that I am aware of, to the same extent in cerebral disorders, as this case so strongly illustrates, a grain and a half having been taken every hour for eight consecutive hours without the least nausea resulting from it. While speaking of this valuable medicine in connexion with this class of affections, it may not be out of place to add, that I have employed it with marked benefit in combination with camphor and morphia (aided by cold applications to the head, and preceded by active purgation and leeches to the temples), in two very severe cases of puerperal mania. General blood-letting being for the most part inadmissible, it is very desirable to possess a remedy so available as this proved in both the instances referred to, in controlling the excited state of the circulation, and in tranquillizing the extreme irritability of the nervous system, both which conditions are so constantly present in the more active forms of this distressing malady.—*Lancet, May* 29, 1852, *p.* 516.

123.—*Bony Tumour of the Uterus.*—Dr. Crisp exhibited, to the Medical Society of London, a bony tumour connected with the uterus, which weighed twenty-two ounces; it occupied nearly the entire cavity of the pelvis, was of a globular form, and of so dense a structure that there was some difficulty in making a section of it. The patient from whom it was taken was 75 years of age, and the chief inconvenience she experienced was a difficulty in retaining her urine.—*Med. Times and Gazette, June* 19, 1852, *p.* 629.

124.—ON THE IMPREGNATION OF THE OVUM IN THE AMPHIBIA.

By George Newport, Esq. F.R.S., &c.

[The following are the conclusions and recapitulations derived from Mr. Newport's experiments and observations on this interesting subject:]

1st, then, the *germinal vesicle* disappears in the amphibia before impregnation; and before, or at the time of the bursting of the ovisac, and extrusion of the egg from the ovary into the cavity of the abdomen. It does not return to the centre of the yelk, nor escape to the surface, but is lost much nearer to the latter than to the former position; and its disappearance is the result of the endogenous development of cells in its interior. The egg is cast loose into the abdomen, and then

consists only of the yelk mass in its vitelline membrane, and it is transferred to the mouth of the oviduct by the joint action of the abdominal muscles and the motions of the viscera, and not necessarily through the aid of the male during copulation.

2nd. Changes are going on in the constituents of the egg, both before and after oviposition, as well in the unimpregnated as in the impregnated condition; but they soon cease in the former, and do not proceed to the cleaving or segmentation of the yelk.

3rd. That the egg is not susceptible of impregnation until after it has acquired the envelopes which it gains in the oviduct.

4th. That endosmosis of the entire egg takes place through these envelopes, and is most rapid during the few minutes the egg is most susceptible of impregnation. Further, that this endosmosis is augmented and hastened by an increase, and is lessened and retarded by a diminution of temperature; and that the susceptibility of the egg to become impregnated, and produce, is in exactly the same condition with regard to heat; whether the egg be exposed to, or whether it be excluded from light.

5th. That only extremely minute granules of solid matter can by any possibility pass into the tissue of the envelopes during endosmosis; and that there is no evidence whatever of the existence of a fissure or orifice, in the envelopes of the egg of the amphibia, at the time of, or before impregnation, capable of admitting the spermatozoon to the interior of the yelk-membrane of its contents.

6th. That it is the spermatozoon alone which effects impregnation; and that this does not take place until the spermatozoon is brought into immediate contact with the external envelopes of the ovum.

7th. That the *liquor seminis*, when entirely separated from spermatozoa, certainly does not effect impregnation.

8th. That although direct contact of the spermatozoa with the ovum is indispensable to effect impregnation, I have never been able to detect any traces of these bodies in contact with the yelk-membrane, or even within the substance of the external envelope.

9th. That impregnation is *commenced* the instant the spermatozoa are brought into contact with the egg, but a certain *duration of contact* is essential to its completion.

10th. That impregnation is not effected, when the whole or the majority of the spermatozoa in contact with the envelopes have previously become motionless, and apparently have lost vitality, as they are found to have done after the lapse of a longer or shorter period.

11th. That although an exceedingly minute quantity of spermatozoa suffice to impregnate the ovum, the phenomenon of impregnation takes place more tardily, even with duration of contact, when the number is extremely limited, than when it is in full abundance, without excess; while, when the quantity is deficient, or the duration of contact too limited, then the phenomenon is incomplete, and partial impregnation only is effected.

12th. *Partial impregnation* is shewn in imperfect segmentation of the yelk; and is due chiefly to the spermatozoa being insufficient in quantity, or in duration of contact, or inefficient through diminished vitality; and it may also result from diminished susceptibility in the ovum.

13th. Partial impregnation of the ovum is of frequent occurrence, as I found in my first experiments with fluid that had passed through filtering-paper, but which still contained a very few spermatozoa, either motionless or exceedingly feeble; and further, partial impregnation is of much the most frequent occurrence when the ova are placed in dense fluid before contact with the spermatozoa, as in the experiments with carmine.

Lastly. When the ova are only partially impregnated they are usually, and perhaps always unproductive.

The facts now enumerated lead us to inquire, whether impregnation takes place through any catalytic influence of the spermatozoa, as suggested by Bischoff, while in a state of activity, and at the instant they are brought into contact with the ovum, or whether impregnation results from a diffluence of the spermatozoa thus brought into contact with the surface, the substance into which they may be dissolved being carried by endosmosis with the water imbibed through the tissues;

or whether it is the result of the conjoint influence of both these conditions;—the first action induced being instantaneous and catalytic, and possibly dependent on the persistence of organic vitality in the spermatozoa, while the completion of the impregnation may depend on the imbibition of some material influence or substance derived from the impregnating body. This is a view, which the gradual disappearance of the bodies of the spermatozoa from the surface of the ovum, both in the frog and newt, seems to favour; as we have already seen that endosmosis is an active and important function of the envelopes of the ovum at the very period when impregnation is effected.

All the experiments now detailed seem to shew that in those vertebrata which expel their ova into water before impregnation, as in the tail-less amphibia, and in which,—from the nature of the medium into which the ova are passed,—we may infer that the function takes place most quickly, impregnation is commenced at the very instant of contact of the spermatozoon with the ovum, and even may be completed within very short spaces of time,—but *duration* of at least some seconds of actual contact, even in these animals' ova, is essential to the perfection of the function. But this period, we may fairly conclude, may differ in different classes of animals, and possibly may have some relation to the greater or less facility with which the spermatozoa are brought into contact with the ova.

When the experiments last detailed are compared,—the effects produced by the application of media which influence the spermatozoon and the ovum chemically—with those of which the effect is merely mechanical, we seem to have made some advance towards a future knowledge of the nature of the impregnating power. Although we are as yet entirely without proof, that any material influence or substance is actually transmitted from the spermatozoon on the surface of the ovum to the yelk, in the interior, we have evidence, that fluids are imbibed by the ovum by endosmosis through its tissues; and, although not a trace of the spermatozoon is detected in the interior of the ovum, we have seen that it remains for a long time on the surface, and gradually disappears, apparently by diffluence; so that it may be fair to conclude, that the agency of this body is material in its operation. On the other hand, the effect which we find is produced on the yelk by the direct and even momentary contact of the spermatozoon with the envelopes of the ovum, seems closely to resemble that of the so-called catalytic power of certain known bodies, in so far as that contact, during only very short spaces of time, with the surface of the ovum, appears to be sufficient to induce certain changes in the interior. These changes, too, as known of catalysis, are carried only to a certain extent when the exciting agents,—in this instance the spermatozoa,—are feeble in action or but very few in number; and then, as we have seen, the yelk may become only more or less partially segmented; or the changes in it, having proceeded to a certain extent, may then become arrested, apparently from deficiency of the originally exciting cause.

Then, again, we find that although segmentation of the yelk may take place, embryos are not produced unless there has been some continuance or duration of contact of the impregnating with the impregnated body; and that the number produced seems to have reference to the duration and to the full sufficiency of the exciting cause. But neither what we at present know of the so-called catalytic power, or of endosmosis, appears alone to be sufficient to account for the whole of the phenomena of impregnation. Simple contact of the spermatozoon does not appear to be sufficient to determine the transmission of more or less of the material structural characters of the male parent to the offspring; while diffluence and endosmosis of the substance of the spermatozoon can hardly be imagined to occur in a brief second or two of time sufficiently to effect the full impregnation of the yelk, and induce its invariable consequence, segmentation. Possibly, we may hereafter find that the first changes induced by contact of the impregnating body are completed by its diffluence, and by the material constituents into which it is dissolved being transferred to the yelk by endosmosis.—*Edinburgh Med. and Surgical Journal, July*, 1852, *p.* 44.

125.—PARALYSIS OF BLADDER FROM OVER DISTENSION AFTER DELIVERY, SIMULATING PERITONITIS.

By Dr. John C. W. Lever.

[In this case, twenty-four hours after delivery, symptoms resembling peritonitis supervened. The labour had been tedious and protracted—but no manual or instrumental interference had been required. Dr. Lever passed the catheter and drew off seven pints of urine, by which the symptoms were speedily relieved. The bladder, however, from over distension was afterwards found to have lost its contractile power, and the catheter was required twice daily for its relief. Nine weeks after her confinement she was admitted into the hospital.]

Appearance on Admission.—She was a tall, good-looking girl, with dark hair, fair complexion, and delicate skin; and of a very happy and contented disposition, and sanguine temperament; she appeared in tolerably good health, but weak, not having been out of bed since her confinement; her appetite was good; and all the functions of the body properly performed, with one exception, viz., that of the bladder, which had totally lost its expulsive power; she suffered no pain or uneasiness about the pelvis, and the uterus, by vaginal examination, had regained its normal condition, and was not in any way displaced; pulse good, about 82; tongue clean; *urine* high-coloured and somewhat ammoniacal, but in other respects healthy.

She was ordered to be electro-galvanised three times a week. Water to be drawn nocte maneque. ℞. Tinct. ferri sesquichloridi, ♏x, ex. inf. quassiæ, t. d.

April 15th.—The galvanism caused a good deal of pain for some time after its application, but at present with no manifest benefit; the urine appeared to flow a little faster, and the bladder did not require such constant pressure with the hand as it did when she was first admitted, to thoroughly empty it; urine still offensive.

20th.—Continued about the same, had regained no control of the bladder as yet; to-day the menses appeared for the first time since her confinement; she was still happy and in good spirits.

To have the electro-galvanism applied every day, beginning on Monday.

23d.—Left hospital in consequence of some disagreement with the sister.

25th.—She called on Dr. Lever, stating she had passed her water on the evening of the day she arrived home, and ever since had been able to dispense with the use of the catheter. Dr. Lever ordered her to attend the hospital to be electrified daily for a week.

30th.—She still continued to pass her water voluntarily, but was compelled to do so seven or eight times a day, and two or three times at night; the urine scalded her, and was sometimes offensive; she appeared much improved in strength and health, but complained of fulness, bearing down, and weight in the perineum, with a tendency of the womb to prolapse. She had nearly taken all her medicine, and would attend on Saturday at the out-patients' room.

May 4th.—Had continued to pass her urine without any difficulty, the bladder losing its irritability, and retaining its accustomed quantity without inconvenience. Ordered to attend the electrifying room three times a week, and to take decoct. cinchonæ c., acid. nit. dil. ♏xj, ter quotidie.

I was called to this patient, her attendants supposing she was suffering from puerperal peritonitis, but the diagnostic symptoms were wanting; pain there was and increased by pressure; the pulse quickened, but not *wiry*; the skin moist, and the perspiration had an urinous smell; her position was peculiar, but was that which I have often remarked in over-distended bladder; the hand pressed upon the perineum. The introduction of the catheter soon solved the doubt, and her recovery of the power of micturition, I believe, is due to that valuable agent, recommended by Dr. Radford, of Manchester.

She has been confined a second time, but suffered no inconvenience.—*Guy's Hospital Reports, Vol. 8, part 1, p. 41.*

126.—ON THE DIAGNOSIS OF CHRONIC OVARIAN TUMOURS.

By Dr. E. J. Tilt.

Ovarian Tumours may be confounded with Tumours of the Unimpregnated Womb.—Retroversion and retroflexion of the womb have been mistaken for incipient ovarian tumours, fallen into the recto-vaginal pouch, or confined there by false membranes. On examining, by the vagina, a patient suffering in this way, we may find a circumscribed tumour at the posterior portion of the vagina, painful on pressure, and resembling the fundus of the womb; but on a more careful examination, the os uteri will be found in its proper position looking backwards, the body of the uterus forwards. The mobility of the tumour, by the uterine sound previously introduced, will show whether or not it be uterine.

Retroflexion of the womb is more likely to simulate incipient ovarian cysts; for, as in this affection the fundus uteri is thrown back upon itself, like the belly of a retort, while the os uteri remains in its natural position, the finger feels a tumour directly behind it, between the rectum and the vagina, but here again the uterine sound soon clears away any doubt that may have arisen, for it will be found that the concavity of the instrument will be obliged to pass backwards, following the course of the cavity of the womb, and through the walls of the tumour; the point of the instrument may sometimes be felt by the finger placed in the vagina. By a careful manipulation the tumour may be made to disappear and to re-appear so often as it is restored to its natural position, or again directed from it by the sound.

Ovarian Tumours may be confounded with Abscess of the Walls of the Womb.—*Case.*—Some years since Professor Recamier was consulted by a medical man for his wife, who had long suffered from what was called ovarian dropsy. On making a very careful examination, Recamier discovered a round tumour about the size of a pigeon's egg, situated between the rectum and the uterus. On exploring the rectum with the index of the left hand, while that of the right remained in the neck of the womb, more than usually dilated, he felt fluctuation, and as the pus seemed nearest to the posterior wall of the neck of the uterus, Recamier determined on making an incision there. To perform this operation he placed the index of the left hand in the neck of the uterus, and guiding a convex bistoury on the pulp of the finger, he plunged the extremity of the bistoury into the abscess; a few teaspoonfuls of pus came out, and to facilitate its egress he enlarged the inferior angle of the wound, by completely cutting through the posterior lip of the os uteri, the index of the left hand placed in the rectum serving to guide the bistoury, and preventing too deep an incision. During the following day a small quantity of pus was voided. Frequent injections were made, and the patient soon got well. This case shows how to detect and to cure similar instances of disease.

Ovarian Tumours may be confounded with Abscess of the Cavity of the Womb.—Husson presented to the Anatomical Society of Paris a case of this description, the neck of the womb was completely obliterated, and its dilated cavity contained two tumblers of pus. Maisonneuve saw a similar case in a woman who died from cholera; and Dr. Reignier has repeatedly observed the same appearances in the old women of the Salpêtrière—the asylum for aged women in Paris. In Husson's case, the woman had experienced no symptoms, but some of Dr. Reignier's patients were troubled with bearing-down pains. We admit that a case of that description might be taken for an ovarian tumour, and then, if a careful recto-vaginal examination were made, the swelling would be referred to the womb. If, on making a speculum examination, the womb were found obliterated, the presumption would pass into conviction; and if not, then the uterine sound would show whether the womb was normal and the tumour ovarian. The rarity of the case must be borne in mind.

Ovarian Cysts may be confounded with Hydrometra or a Collection of Water in the Womb, and we do not doubt but that some of the cases described as cases of spontaneous cure of ovarian cysts are to be referred to the rupture of such uterine tumours. The distension of the impregnated uterus by an aqueous liquid has been lately contested by Naegele and by Stoltz, although it is difficult to see why the mucous surface of the womb should not secrete a large quantity of limpid fluid, as

well as the mucous surfaces of the maxillary and frontal sinuses. The disease has been too well described by Ferrelias (Patho. Liv. vi., chap. 15), by Mauriceau (Traité des Maladies des Femmes Grosses, tom. i., p. 74), by Lisfranc (Clinique, tom. iii., p. 346), to be thus denied. Dr. Storrey has also described a case (Haye's Journal, 1850). It will not do to say that the aqueous discharge comes from the ovary, because Vesalius, Blank, and Nicolai have opened women who had long suffered from this disorder, and found the womb containing 84lbs. and even 180lbs. of serum. This disorder is accompanied by the symptoms of pregnancy, and is generally considered such until after the ninth month of its duration. Then it is generally regarded as ovarian. In a case carefully related by Blegny (Journ. de Médicine, tom. ii., p. 97), it was allowed to exist for twelve years, and the noble lady subject to this infirmity was only delivered from it by the violent concussion of coughing, by which means a large quantity of water was discharged.

After fully ascertaining the impossibility of the womb being distended by a child, it would be well to imitate Lisfranc, who in one of his cases introduced a sound into the womb, and cured the patient in a month. Cruveilheir says, that in the few cases of this description that he had met with, the disease was always taken for pregnancy, and the mistake only found out by the evacuation of the water. We ourselves have been similarly deceived, as in the following instance:—A lady, 25 years of age, and married three years, was said to be affected with ovarian disease, and consulted us for that disorder. She complained of swelling of the abdomen, uterine pains, and slight leucorrhœa. Her breasts were swollen and painful, the nipples were surrounded by a dark circle, and a yellowish creamy substance came from them. The catamenia had desisted for three months. Suspecting pregnancy or an uterine affection, we examined her, and were confirmed in our diagnosis by a dilated orifice, and a softening similar to what is met with at the third month of pregnancy. On making a speculum examination, the vagina was more livid than in an unimpregnated woman, and the os uteri was similar to what it should be in the first months of pregnancy. We pronounced the patient to be in the family way; but unsatisfied with our report, she consulted another doctor, who considered her case to be one of inflammatory granulation of the os uteri. He cauterized the cavity of the neck with nitrate of silver; but the night after the second cauterization the lady was surprised at finding herself wet, and on her placing herself on the commode, she passed (without making urine) two pints of clear water, "similar," said her mother, "to the bursting of waters in a confinement." For two days did this water continue dribbling from her, when the swelling of the abdomen disappeared, all other symptoms vanished, and the catamenia reappeared two months after. Thus the patient had neither ovarian dropsy, as was at first believed, nor uterine inflammation, as was afterwards stated; neither was she pregnant, as we imagined. Our diagnosis was founded on rational grounds; and the error could only have been made clear by passing the uterine sound into the womb, which would have been an *unwarrantable* proceeding; for as such cases are extremely rare, and as pregnancy is an event of every-day occurrence, the risk of abortion would have been too great. In this case, therefore, the patient owed her recovery to an error of diagnosis.

Ovarian Tumours may be confounded with Cystic Tumours in the substance of the Uterus.—In the Museum of the College of Surgeons of England there is a preparation removed from a patient in whom this mistake took place (Home 980, uterus 23,); it displays a portion of the uterus in which a large encysted tumour had formed. The patient had been twice tapped, and the cyst emptied. By means of the sound such a tumour might have been shown to be uterine, before it attained to a considerable size, or after it had been emptied, but at other times the possibility of distinguishing it from an ovarian cyst would be very great, if not impossible.

Ovarian Tumours may be confounded with the Uterus Distended by the Menstrual Secretion.—Mr. Benjamin Travers, jun., witnessed such a case in St. Thomas's Hospital, under the late Dr. Williams. Examination per vaginam detected a fluctuating tumour, which was freely opened with an abscess-lancet, and a large wash-hand basin was filled with the retained menstrual fluid. The patient was in bad health, and presented general symptoms which led to the belief that the tumour

was ovarian. Such a case Mr. Travers thought might again be mistaken for ovarian dropsy.

Rousseil mentions a similar case, where all the symptoms of pregnancy were found, and only dispelled at the ninth hour by a copious discharge of dark blood. A careful examination, corroborated by the fact of the patient's age, and by the history of the case, would, however, easily permit of a correct diagnosis. It may be well also to bear in mind, that the uterus, distended by retained menses, is not always regularly developed, but may increase to the right or the left, and give that obscure perception of fluctuation which is frequently found in a malignant mass. On each side of a central tumour may also be found smaller elongated tumours, formed by proportionally-distended oviducts, with obliterated abdominal ends, as in the case related by Dr. Jackson, in the "American Journal of Medical Sciences."

Ovarian Tumours may be confounded with an Accumulation of Gas in the Womb.—Mauriceau, Schmitt, M. Lefevre, and many other authors, have seen examples of this singular occurrence. In Mauriceau's case the patient was fifty, thought herself pregnant, had prepared every thing, when her hopes of progeny vanished in wind. The obliteration of the os uteri on the one side, and the clear sound furnished by the distended womb, will, we trust, enable the practitioner to prevent a woman in future giving so much trouble to herself, and so much amusement to her neighbours.

Although it be denied by Naegele and Stoltz, that the unimpregnated womb can be distended by gas, the fact is admitted by modern practitioners; by Peter Franck, (Med Pract.), by Columbat de L'Isere (Traité des Maladies des Femmes, tom. ii., p. 781), and lately by Dr. Teisser, of Lyons (Gazette Méd. de Paris. Jan. 1844). In these cases menstruation ceased, the patients were thought pregnant, one of them even said she felt the movement of the child, but after the noisy expulsion of fetid air by the vulva, the symptoms of pregnancy disappeared. Why should not the mucous membrane of the uterus sometimes secrete air, as well as the bladder or the intestines? Why should it not be retained if the surface of the womb is agglutinated?

Ovarian Tumours may be mistaken for Uterine Fibrous Tumours.—This mistake is much more liable to occur than any of the preceding, because the frequency of such tumours is great. Operators have often been deceived by these tumours, for we find that Messrs. Lizar, Heath, Otter, and Atlee have operated for ovarian disease, and only found an uterine tumour; and when they are pediculated, and thus easily moved, and central, as are ovarian tumours, it is difficult not to be mistaken. The absence of fluctuation, the hardness of the tumour, the very gradual progress of the disease, may indeed allow one to affirm that the tumour is solid; but were it not for the uterine sound, it would be difficult to affirm that it is not ovarian.

If we find that the uterine sound passes, as it were, into the morbid mass, if there is no possibility of separating the womb from the tumour, and if every movement given to the tumour conveys similar movements to the sound, we may consider the tumour uterine; but if we find the uterus small and moveable, if the sound passes anteriorly to the tumour, and can be separated from it, and when thrown upon the rectum it appears healthy, then we may confidently affirm the tumour to be ovarian. The cavity of the womb may be lengthened, and the sound will indicate the modification of structure; but although the sound may only penetrate the womb to its normal depth, or two inches and a half, still the uterus may not be normal, for its enlarged cavity may be filled with a fibrous tumour, as in Dr. Atlee's fourth case.

Case.—In Dr. Simpson's ward at the Royal Infirmary, in Edinburgh, we saw a woman with a considerable enlargement of the belly, occasioned by a tumour, which had all the appearance of being ovarian, for it was central, moveable, and round. Such would have been the diagnosis of most medical men; but Dr. Simpson passed the sound seven or eight inches, and made us feel its extremity high up on one side of the tumour, whose nature and seat it thus indicated as uterine.

Such is the value of "a bent wire," when bent by the hand of genius, and it will long perpetuate the memory of its originator; but this instrument may still sometimes deceive us, and cause us to take an ovarian tumour for one of uterine origin, as in the following case related by Mr. S. Lee:—

Case.—A patient presented herself with an abdominal swelling on the right side, hard, and without fluctuation, not at all moveable, but it could be traced down into the pelvis; it had been a considerable time in its formation. The examination per vaginam discovered that the brim of the pelvis was occupied by a solid tumour; a small nodule was felt rather in front of the centre of the pelvic cavity, in which was the os uteri. The sound passed upwards and forwards nearly four inches: it moved with difficulty, as through a cavity, the sides of which were much compressed. This examination was made in December.

Here, then, you have every characteristic of a fibrous tumour in the posterior walls of the uterus. The cavity is elongated, the uterus is fixed by the brim of the pelvis, and the tumour in the abdomen is hard and smooth, possessing no fluctuation. The tumour now rapidly increased, and in the January following had occupied the whole cavity of the abdomen. There was then distinct fluctuation in particular parts, and this fact disclosed to us the real nature of the case, viz., that it was a multilocular cyst, complicated with much solid matter. The reasoning from these symptoms was correct, although they were afterwards found peculiarly complicated; for instance, the uterus was quite healthy, and unconnected with the tumour, but the tumour had so elongated the left corner of its body, and so elevated it, that the uterine sound passed into the cavity thus formed, and the tumour itself contained such a large quantity of solid matter, that it pressed so strongly the uterus between itself and the pubes, as to cause it to become fixed and immoveable, consequently leading us to suppose it to be a fibrous tumour.—*Provincial Med. and Surgical Journal, August*, 1852, *p.* 417.

127.—ON THE DIAGNOSIS, TREATMENT, AND PATHOLOGY OF OVARIAN TUMOURS.

By Dr. Frederic Bird, Lecturer on Midwifery and the Diseases of Women, at Westminster Hospital

[The patient in the following case, when first seen by Dr. Rigby and Dr. Bird, is stated to be 18 years of age. At the age of 13, the system was much depressed by an attack of measles, quickly succeeded by scarlet fever. When menstruation commenced it soon became inordinate, and constantly required the administration of remedies to check it. Menorrhagia at one time became alarming; but under the treatment of Drs. Marshall Hall and Hamilton, this symptom was relieved. Very soon, however, evidences of ovarian tumour presented themselves. On examination externally, there was found great abdominal enlargement, though the rest of the body was emaciated; abdomen distended to a maximum circumference of 38 inches; the enlargement is symmetrical; viewed in profile, the umbilical region presents marked prominence; the pulse ranges at 100.]

Internal examination finds the uterus drawn high up in the pelvis, but, by the introduction of the sound, it proved to be quite moveable, while sharp palpitation of the abdominal swelling conveys no impulse to it.

The opinion given by Dr. Rigby and myself was, that the case was one of uncomplicated ovarian tumour—that it consisted principally of one large cyst, and as yet had not formed adhesions to surrounding parts, and might be removed by the operation for excision. We not only believed that the tumour could be removed, but advised its immediate extirpation.

The latter part of this opinion was based upon the facts, that the tumour had rapidly increased in size,—that the powers of the patient were so much reduced that any great delay would preclude altogether the possibility of her enfeebled system sustaining the shock of a severe operation; and that, setting aside the urgency of the general symptoms, the frequent and often profuse menorrhagia, over which remedies had been proved to have little control, was in itself an important source of exhaustion, and dependent as it probably was upon the ovarian disease, would continue to aid the work of constitutional exhaustion, and thus accelerate the only termination that could rationally be expected—death.

Another and always important reason for advising the operation, was presented by the mental condition of the patient. Endowed with high intellectual qualities, and supported with equal moral firmness, it was only necessary to explain to her

the proposed treatment, for it to be at once understood and accepted. Her well-tutored mind never vacillated; and, from the moment of the opinion being communicated to her to the completion of her cure, she neither hesitated nor complained, but passed through her period of suffering and anxiety with calm and thoughtful fortitude.

The unavoidable delay of a week from the time at which the above opinion had been given, afforded an alarming evidence of its correctness, for, at the end of that period, the patient began to sink rapidly, and could not have survived many days. The operation was immediately performed.

Dr. Rigby, Mr. Skey, and Mr. Barnard Holt, were present. The room being filled with moist air at the temperature of 80°, and the patient placed in a convenient position in bed, Dr. Rigby brought her under the influence of chloroform so speedily and easily, that, without the slightest movement or changed expression of the countenance, she passed in a few minutes into a quiet sleep, from which she did not awake until the tumour had been removed.

An incision of about an inch long was first made in the course of the linea alba, a little below the umbilicus, into the peritoneal cavity, the edges of the wound quickly becoming retracted, and making visible the large blue cyst of the tumour beneath. A moment's observation sufficed to note its mobility and absence of adhesions. Using the fore-finger as a director, I immediately passed the bistoury upwards a little beyond the umbilicus, and downwards nearly as far as the pubes, making the incision about six inches in length. A little bleeding followed the division of two small arterial branches; but, from the pressure of the tumour against the edges of the wound, no blood could pass into the abdominal cavity. Torsion applied to one vessel, and ligature to the other, arrested the slight hemorrhage, which only required such interference because delaying the completion of the operation. The cyst was then grasped by the forceps, its cavity opened, and escape given to about sixteen pints of fluid. As its contents passed out, the cyst continued to advance steadily under gentle traction, and when reduced to a fourth of its former bulk, was lifted from out the abdominal cavity, remaining attached to the right side of the uterus by a thick pedicle, formed of thickened broad ligament, margined by the Fallopian tube, and containing within it the round ligament and two arteries, one of which was of larger size than the other, and ran near to and beneath the tube. A very strong double ligature was next carried through the middle of the pedicle, a portion of the ligamentous structure and tube divided, and a ligature firmly tied on either side, their ends being subsequently braided together, so as to make one cord. The knife was then carried through the pedicle, at a very short distance from the ligatures, and the extirpation of the tumour was complete. The divided vessels of the pedicle having been seen to be quite secure, and the ovary on the left side found healthy, the lips of the abdominal incision were brought together by sutures, and closed at every part except at the inferior angle, through which the ligatures passed. As much traction was maintained upon the united ligatures as was necessary to prevent their recession into the abdominal cavity, cold water dressing applied, and a very light bandage passed round the body.

There had been but little variation in the pulse, either from the operation or the action of the chloroform; and, although it was temporarily weakened and quickened after consciousness had been restored, yet its altered state was rather attributable to mental than physical causes. The use of a little stimulant soon improved its character, and in less than an hour after the removal of the tumour it was moderately full, regular, and 90. At the expiration of that time she was visited by Dr. Rigby and myself; and, influenced by the fact of the patient having, on some former occasion, suffered from the exhibition of opium, the extract of hop, in full dose, was substituted, with the object of procuring repose. The temperature of the room was reduced to 70°, and it was ordered that a little ice should be given from time to time.

℞. Ext. humuli gr. x. Ft. pil. ii., statim sumendæ.

From this hour until the time of danger had passed, the progress of the case was constantly watched by Dr. Rigby and myself; but it will only be necessary to record the symptoms presented by the patient, and the results of our consultations at the following dates:—

3rd hour after the operation.—The patient lies in a perfectly easy position, pre-

sents a cheerful countenance, and has no symptom to complain of. She is without pain or sickness, but is not disposed to sleep; pulse has continued to increase in frequency, and now ranges at 110; the skin has become hot, and there is some headache and intolerance of light; very little perspiration has occurred. The catheter has removed about three ounces of water.

Rep. extr. humuli gr. xv., statim.

6th hour.—Still sleepless, but without pain; nausea, scarcely amounting to vomiting, has occurred occasionally; the pulse has risen to 118; the skin more hot and dry; the abdomen a little distended; urine secreted freely. The temperature of the room now increased to 80°. Ice and ice-water administered in larger quantities, additional clothing placed on the bed; cold water freely applied to the wound and lower part of the abdomen, the wetted napkin being covered by oil-silk, or dry cloths, and the anodyne repeated.

9th hour.—Soon after the last report, the skin began to act freely, the pulse diminished in frequency, until it now ranges at 100; urine was copiously secreted, and removed by catheter; headache has ceased, and she has had refreshing sleep. The temperature of the room to be kept the same, unless faintness be complained of, when it is to be reduced. The iced water to be freely given.

Rep. extr. humuli.

12th hour.—She sleeps tranquilly.

2nd day.—Has passed a very quiet night, perspiring always gently, sometimes freely. She has not slept many hours, but has been perfectly easy. The ice has been freely taken, and now a little arrow-root is allowed. The pulse has continued to lessen in frequency, and is now 94, and of natural character; the abdomen is a little more distended by flatus, but less so than in similar instances; urine in full quantity, removed by occasional catheterism. The wound presents a very healthy appearance, and the ligatures are but slightly tightened by the flatulent distension.

In the evening the pulse became a little accelerated, and the skin was less disposed to act; there was some slight headache, and no aptitude for sleep. The temperature of the room, which, during the day, had been lowered to 70°, was ordered to be raised to 80°; iced water in larger quantities being, at the same time, given, and as soon as active perspiration ensued, the following:—

℞. Ext. humuli gr. xv.; Ft. pil. iij. statim sumend., et post horas duas repetandæ si opus sit.

3rd day.—A good night is, this morning, followed by improvement; the pulse rather feeble, is under 90; the urine, evacuated by catheter twice in the night, healthy; the skin moist and cool; the abdomen scarcely at all distended; the wound healing, and the appetite returning. The bowels have acted but inefficiently, and the dejections contain little bile.

In the evening there was some return of headache, perhaps consequent upon a little addition to her very low diet of beef tea, and she was indisposed to sleep. The tongue had become a little coated. Temperature to be kept up at 70°.

℞. Hyd. c. cretâ, gr. iij.; ext. coloc. co. gr. vj. In pil. iij. divid., statim sumendæ.

4th day.—The night has been passed comfortably; there has not been much sleep, but there have been no important symptoms; the bowels, disposed to act, were assisted this morning by a simple enema, and have now been fully relieved; the secretions go on well; the pulse is about 88; the skin and tongue healthy.

5th day.—Progressing satisfactorily; there are no symptoms to record: the catheter is still used. The diet has been improved, and a little wine, much diluted, allowed as beverage; the dejections are deficient in colour; fresh cool air has been freely admitted into the room.

Ordered: ℞. Pil. hydrarg. iij., ext. fellis bov. inspis. gr. v. Fiant pilulæ ij., horâ somni sumendæ.

6th day.—Copious relief from the bowels, with much bile, has resulted from the pills. In all respects she is progressing well. The hop extract is still taken at night, and with good effect.

7th day.—Continues to improve; diet increased; bowels regular; pulse 78.

14th day.—From the date of the last report there has been no important deviation from a rapid and progressive improvement. More nutritious diet has been cautiously allowed, under which she has quickly acquired strength, and has

only kept in bed to prevent disturbance of the ligatures. The wound has healed at every point, save that through which the ligatures pass; the sutures were removed several days since; the regular action of the bowels has been maintained by the occasional use of the ox-gall; the catamenia have occurred, and without the former tendency to profuseness: the bladder has still been relieved by the catheter, for although the power of expulsion has been regained, it has been found difficult to employ it without causing pain in the course of the ligatures. From time to time, the detachment of the ligatures has been assisted by gentle traction and torsion alternately, and they were to-day withdrawn from the wound without difficulty or pain, bringing away in their terminal loops a small portion of dead ligamentous tissue.

28th day.—Speedy convalescence forms the only note made since the last report. A little irritability of the bladder has once or twice occurred, probably from the previous frequent catheterism, but has yielded to the same simple means by which sleep had been procured,—the extract of hop,—and micturition is now performed as healthily as are all the other functions of the body. The only treatment has consisted in good diet and carriage exercise, and the improvement in strength has been remarkable.

When borne down by the exhausting tax of her disease, no food or tonics served to sustain her, or to do more than afford a short-lived improvement; but now, freed from her cause of suffering, she has become comparatively strong, and enabled to take exertion to which she had long been inadequate. The spinal incurvation consequent upon the pressure of the tumour has disappeared, the widely-expanded ribs have resumed their natural position, the abdominal walls have contracted, and the general figure is perfectly restored. The wound has continued to cicatrize, and is now marked by a fine linear scar of less than two inches in length.

Soon after this period the patient left London, and a report, sent a month subsequently, told of her enjoying good health and strength, of having become stouter, of being able to take active exercise on horse-back, and of presenting no traces of the ill-health from which she had long and patiently suffered.

The tumour, which involved the right ovarium, was examined immediately after its removal, and presented the following features:—Its total weight was about 20lbs.; its figure nearly ovoid; it was principally formed of one large primary sac, containing, at its base, a mass of very small secondary cysts, densely aggregated, and filled by thick mucoid secretion, of light colour; while the fluid contained in the large cyst was darker, being light brown, and scarcely viscid. This latter fluid had a specific gravity of 10.40, contained a small proportion of albumen, much mucus, and, after standing, presented a small quantity of cholesterine on its surface, and became of lighter hue from the deposition of dark matter, which afterwards proved to be altered blood. The primary cyst varied little in thickness, was thinner above and thicker below, but averaging about four or five lines; it was of a light, bluish white tint, to which irregularly scattered veins gave in many points a darker hue. The arterial vessels, which ran in great numbers over the cyst, were very small, except at their origin from the two vessels traced into the pedicle, one of which appeared to be about the size of the temporal artery, the other smaller. Over the lining membrane of the cyst by far the greater number of vessels seen were veins, many of which were of considerable size; a few small pedunculated cysts, filled with watery fluid, were seen scattered over the interior of the parent sac. Over the lower portion of the tumour the broad ligament was seen to stretch; and, near to it, the Fallopian tube, much elongated, could be traced, passing upwards in a somewhat curved direction.

The pedicle of the tumour, which could not have exceeded half an inch in length, was nearly the same measurement in diameter, and was formed by the ligaments, the Fallopian tube, which was of more than usual size, two arteries of unequal size, and three rather small veins. Over the anterior surface of the tumour, a very few and minute filaments of lymph could be observed, but in no part sufficient to give rise to adhesion with the parietal peritoneum.—*Med. Times and Gazette, Aug. 21, 1852, p. 185.*

ADDENDA.

128.—ON THE CHEMICAL SUBSTRATA OF THE HUMAN BODY.

By Dr. G. E. Day.

[In an interesting and clever review of 'Lehmann's Physiological Chemistry,' Dr. Day gives an excellent epitome of the *substrata* of the animal body, treated of by Lehmann in his first volume. Dr. Day remarks:]

On reviewing the chemical substrata of the animal body, treated of in the first volume, we perceive that there are four groups of substances in which the vital processes are most intensely manifested; or, in other words, which most actively participate in the metamorphoses of the animal tissues. These are:

1. *The albuminous substances or protein-bodies, and their derivatives.*
2. *The fats.*
3. *The carbo-hydrates, and*
4. *The inorganic salts.*

That *albumen* is one of the most important substances in the animal body is sufficiently obvious from the positions in which it occurs: we find it in the greatest quantity in the blood, and in all those animal juices which principally contribute to the nutrition of the organism; however, a chemical investigation of various tissues shows us that albumen only requires slight modifications to enter into other forms; as, for instance, that of syntonin, or muscle-fibrin, the essential constituent of the solid contractile parts by which alone both the voluntary and involuntary movements of the animal body are accomplished. We find it both in its fluid and solid form in that most complex of all structures, the nervous system, both in the nerve-tubes and in their contents. In association with a little fat and traces of sugar, the ovum consists merely of albumen and casein holding salts in solution; and there can be no doubt that with the co-operation of the oxygen conveyed by the blood, all the tissues are formed from the protein-bodies, although we are not as yet in a position to explain with certainty the exact nature of the changes by which the gelatigenous and certain other structures are produced.

The fats next claim our attention. Their physiological value and their mode of origin have been noticed at some length in the first volume; we will here simply mention, that without the intervention of fat no colourless blood-cells, and therefore no red corpuscle, could be formed; indeed, no animal cell or fibre of any kind. While, however, in the normal state, the fat takes an active part in cell-formations in the animal body, we also, in some cases, perceive a tendency to a formation or production of fat in existing cells and tissues whose nutrition has been peculiarly modified. The phenomenon commonly designated as fatty degeneration admits of a double explanation. We may either assume that the pre-existing fat, under the influence of certain molecular forms, is accumulated in the older and less vitally active cells, and replaces the nitrogenous textural particles as they become worn out; or that the fat is produced directly from the nitrogenous textures of the cells or fibres, the nitrogen being developed in the form of ammoniacal salts, and the fat being left as a product of decomposition. Lehmann, in his first volume, supported the former view as the least hypothetical of the two, and as the more probable from its simplicity; since the date of its publication Wagner and Liebig have, independently of each other, instituted certain positive experiments which very much strengthen the second view. Wagner made the remarkable observation that crystalline lenses, pieces of dried albumen from eggs, and other substances poor in fat, which were introduced into the abdominal cavity of birds, were perfectly changed in their texture in the course of from twenty-five to fifty-four days, the residue containing far more fat than existed in the original substance. Liebig has shown that the metamorphosis of the albuminous tissues of the animal body into fat is, in a chemical point of view, not only possible but probable. Both in the putrefaction and in the gradual oxidation (by chemical means) of albuminous substance, the results, under favourable conditions, are ammonia and fatty acids, such as the butyric and the valerianic.

These experiments and observations of Wagner's and Liebig's are, at all events,

sufficient to show that there is no chemical absurdity in assuming that, under certain circumstances, fat may be a product of the decomposition of the protein-compounds.

The carbo-hydrates, constituting the third group, are in many respects closely allied to the fats. The substances of this class occurring in the animal body are, dextrine, milk-sugar, inosite, and glucose; to which, perhaps, we should add cellulose, occurring in the investments of the tunicata. Recent investigations have detected sugar, in small quantities, in almost all the fluids subservient to nutrition, as, for instance, in the blood, transudations, lymph, chyle, the albumen of the egg, &c.

"The sugar," says Lehmann, "which we meet with in the intestinal canal of herbivora and omnivora is due to the metamorphosing influence of saliva and pancreatic juice on starch and other carbo-hydrates; but we also find sugar in the blood of carnivorous animals in no very inconsiderable quantities; this must therefore have arisen from some other source than from the carbo-hydrates conveyed into the system from without; from a number of comparative analyses of the blood of the portal and of the hepatic veins, I believe that I have indicated the probability that the sugar which is found in the liver, where it has also been found by Bernard and Frerichs, owes its origin to the decomposition of albuminates, and especially of fibrin."

When, further, we consider that nature has provided the egg with a small quantity of sugar, and that its amount varies according to the stage of development of the chick, the conviction forces itself upon us that the sugar, like the fats, is intended for some other purpose in the economy than merely to sustain the animal heat by its slow oxidation.

We are still far from being fully acquainted with the carbo-hydrates and the products of their conversion, which occur in the animal juices. Lehmann believes that we shall find indifferent substances similar to Scherer's inosite in the extractive matter. Our knowledge is more perfect regarding the acids which are formed in the animal body from the carbo-hydrates: formic and acetic acids have recently been found by Schottein, a very promising young chemist, in large quantities, in the sweat; butyric acid occurs, not only in the sweat, but also in the muscular fluid, in the parenchymatous juice of the unstriped muscular tissue of the stomach, the intestinal canal, and the urinary bladder; and lactic acid is found in the gastric juice as well as in most of the above-named fluids.

We regret that we cannot follow our author through his demonstration of the facts that the presence of small quantities of sugar essentially contributes to the solution and digestion of the protein-bodies, and that the carbo-hydrates, or rather their acid products of metamorphosis, discharge an important function in the intestinal canal, in no way directly connected with the process of respiration.—*Brit. and For. Medico-Chirurgical Review, January*, 1853, *p.* 89.

129.—ON SCROFULA.

By Dr. M. A. Eason Wilkinson, Manchester.

[It is now pretty universally admitted that tuberculous and scrofulous diseases are identical, the susceptibility of the various organs at different periods of life accounting for the apparent difference in their choice and development. Dr. Wilkinson says:]

As most writers are now agreed that the great pathognomonic sign of scrofula is a deposit of tuberculous matter, it may be well to direct our attention for a moment to its description. Tubercles may be described as small tumours, varying in size from a small pin's head to that of an orange; they are round in form, and vary in colour from a semi-translucent hue to a yellowish white or greyish yellow. They may be easily crushed, like cheese, between the fingers, and present no organization of structure. Andral says that tubercles are in their first stage when they appear as minute, opaque, friable, rounded bodies, yellowish white in colour and without any trace of vascularity. But this is not the only form in which they may commence; besides the yellowish miliary tubercles, we may have the grey semi-transparent granulations.

Microscopical observers differ very materially in their description of tubercle. At one time it was supposed that the tubercular deposit was not connected with cell formation, but that opinion has now become obsolete. All observers detect granular corpuscles, many of which are about the size of blood globules, and many are found to contain nuclei, and they are agreed upon the fact that these cells possess no developmental power.

Dalrymple is of opinion that scrofulous matter does not even possess the feeble power which induces the further change into pus, but that it passes from the nucleolated cytoblast into an irregular granular body (disintegrated), the elements of which, by some further chemico-vital process, resolve partially into oil or fat globules.

[Early childhood is remarkably disposed to scrofula. In this period the absorbent glands are liable to become the seat of the disease. How is this? Perhaps an inquiry into the structure and function of these parts may assist us in explaining this fact.]

Mr. Goodsir is of opinion that the vasa inferentia on entering an absorbent gland, lay aside all but their internal coat and epithelium, and the latter, in place of forming a thin lining of flat transparent scales, as in the extra glandular lymphatics, acquires an opaque granular aspect, and is converted into a thick irregular layer of spherical nucleated corpuscles. The lymph or chyle is brought into close relationship with the blood in the absorbent glands, and there is little doubt that the epithelial corpuscles above alluded to, derive materials from the blood, which they elaborate as they grow, and which, when so elaborated, are discharged into the lymphatic vessels in the same way as, in a secreting gland, the elaborated contents of the gland cells are discharged into the gland ducts. It is a known fact, that both the lymph and the chyle not only contain more corpuscles, but are more perfectly coagulable after they have passed the glands than before entering them. This fact would seem to confirm the opinion of physiologists now generally entertained, that the function of the lymphatic glands is, through the instrumentality of the corpuscles, to perfect the organization of the lymph or chyle as this fluid passes through them. There is an important distinction to be made between an absorbent gland and most other glands in the body. In the liver, kidneys, pancreas, and salivary glands, for example, the cells separate from the blood certain elements which they combine into a new fluid—the special secretion of each fluid—which fluid is diverted from the blood into the ducts of the gland; but the office of the cells in an absorbent gland is not to create a new fluid, but rather to perfect that fluid which flows through it. It is important to bear this in mind, because an absorbent gland may not only be vitiated by an impure blood, but it may also be deranged by an impure lymph; for, although the cells without doubt receive their increment of growth from the blood, yet it is certain that they are influenced for good or for evil by the quality of the lymph with which they are always in contact. Thus, the lymph which comes from a cancer does not excite the cells to healthy, but to diseased action. The function of the lymphatic glands which I have named, being granted, I submit that we should expect these little bodies to be in a state of erethism, so to speak, when nutrition, growth, and development are being most actively carried on, and we shall not, I think, be surprised to find, that these organs are very apt to fall into disease at this period.

The opinion long entertained by most physiologists, John Hunter amongst the rest, that the office of the lymphatic system is to take up and remove all the effete matter, which is to be cast out of the body, as no longer adapted to form part of it, and as inconvertible into any other useful product, is no longer entertained. The general opinion is, that this office is performed by the blood-vessels, and, as the liquid contained in the lymphatics has all the characters of dilute liquor sanguinis, it seems reasonable to conclude that, so far from the absorbents taking up waste material, they merely select such organizable matter as can be appropriated to useful purposes in the animal economy. I cannot but think that this doctrine has been carried a little too far. It is an opinion now very prevalent, that the absorbents have nothing to do with ulceration, and yet we find in chancre that these vessels absorb the syphilitic virus, and the lymph, so contaminated, excites syphilitic inflammation in the absorbent gland through which it flows. In the sore throat of scarlet fever, too, we are sure that something abnormal must have been

absorbed by the lymphatics, for the glands in the neck often become quickly and enormously enlarged. In inflamed ulcers of the skin, too, how often do we find the absorbent glands become inflamed, although they may be situated at a distance from the ulcer. In malignant diseases, the *materies* of cancer is evidently absorbed; for instance, when you have secondary malignant disease in the lumbar glands from cancer of the testicle, or in the axillary glands from cancer of the breast.

The lymphatics have been found, with a few exceptions, in all the textures and organs which receive blood. It is with this system that scrofula is so intimately connected in early life. It is during this period that the vital and chemico-vital changes are most rapidly performed. The food is quickly digested; the blood rapidly circulates; nutrition, growth, and development, are most energetically carried on; the encephalon is being perfected in quality, and increasing in size; the whole muscular apparatus in the same way is rapidly advancing towards completion of development, requiring nutritious material, not only for its support, but for its progressive growth; the teeth are undergoing the greatest changes; and, when it is remembered that it is at this period we have the development of two sets, and that about the fifth year we have more teeth (48 in number) than at any other period of life, we may form some idea of the rapidity of action which these circumstances induce. These remarks might be extended to most of the viscera, but enough has been said to illustrate the point which I have advanced.

[Tubercle would not seem to be of inflammatory origin. It is much more probable that the mere irritation of the presence of tubercular matter may have excited an inflammatory action.]

When we consider that for nutrition or secretion to take place in any part, it is requisite that the part so nourished, or so secreting, should not only itself be in a healthy state, but that the blood should also be healthy; and not only so, but that it must be regularly supplied to the part, and that there is yet another condition also essential, and that is a certain amount of nervous influence, and, so far as the absorbent glands are concerned, there is yet another condition requisite, and that is, that the lymph which flows there must also be healthy.

Now, should the cells which enter into the composition of these glands lose anything of their proper potentiality, or should the blood be unfit to nourish these cells, I think we can easily imagine that there should be an abnormal product, the result independent of all inflammation. And there is a fact which seems to confirm this opinion, that where the scrofulous diathesis undeniably exists, you may have inflammation of a lymphatic gland, and yet that gland not undergo the scrofulous degeneration, as, for instance, when you have an inflamed inguinal gland from an ulcer on the toe.

Suppose we take it for granted that the office of the lymphatic glands is mainly to furnish white corpuscles, which, be it remembered, are insoluble, we may easily fancy that any interruption to their nutrition might furnish those little granular microscopic bodies which enter so largely into the composition of tubercle. It is admitted that in scrofulous glands we find structures that appear to be composed of the original cells of the glands, become thickened and opaque. I am strongly inclined to think that tubercles in the lungs are formed in precisely the same way, viz., by an imperfect development of the epithelial cells, which line the minutest ramifications of the air tubes and terminal vesicles. This imperfect development of the cells would no doubt put a stop to that exquisitely fine ciliary movement in those minute tubes and vesicles, which movement is essential to the onward progress of the secretion, and in consequence of this arrest of ciliary motion we can account, I think, for the incarceration of the tubercular matter in the pulmonary cells and minute air tubes.

[Does scrofula depend upon some primary morbid alteration of the blood? The result of various analyses has proved, that in scrofula we have diminution of blood globules and increase in the solids of the serum. The change of the blood advances in some measure concurrently with the disease. Dr. Wilkinson does not subscribe to the first part of this opinion, because he says there may not be scrofula although there may be chlorosis or anæmia. He fancies that its influence is exercised upon the nutrition, growth, and development of the cells of the absorbent glands. Dr. Wilkinson, in conclusion, repeats his belief that scrofula is not the result of inflammation.]—*Transactions Prov. Med. and Surg. Association, Vol. 19, p. 51.*

130.—ON THE TREATMENT OF NEURALGIA.

By Dr. Edwin Morris, Surgeon to the Spalding Union Infirmary, &c.

The treatment of neuralgia by *narcotic inoculation*, applied to the nerve, has been recorded in the "Dublin Medical Press," March, 1845. Two cases were successfully treated after this manner in the Meath County Hospital; the first was a case of severe frontal neuralgia; she had been bled, blistered, and had taken opium, without any benefit. "A solution of fifteen grains of acetate of morphia, dissolved in one drachm of creasote, was introduced to the supra-orbital nerve, and along the course of the temporal, malar, and buccal nerves, by four punctures of an instrument made for the purpose. In the space of a minute all pain (except that caused by the operation, which was very slight,) had ceased, and she slept better that night than she had done for months; after the interval of a week she had a slight return of pain in the gums of both upper and under jaw. The fluid was again introduced by two punctures made in the gum of each jaw, and the pain disappeared." She left the hospital quite well. The other was a case of neuralgic sciatica. The fluid was introduced by one puncture behind the trochanter and one half way down the thigh; the pain was instantly relieved. A few days after, slight pain returning, the fluid was again introduced, and with the same good effects. The above cases are strong proofs in favour of the treatment; and I doubt not but that in some cases the treatment by inoculation of narcotics will be found beneficial; at any rate, in obstinate cases, I would strongly recommend the practice.

[*Blisters*, applied along the course of the painful nerve are generally very valuable.]

When the pain is constant, and the parts tender upon pressure, the application of a blister will be advisable; should the pain continue after the application of a blister, the *endermic* use of morphia should be had recourse to. The raw surface of the blister should be sprinkled over with one of the following powders, every six hours, until the pain is relieved:—℞. Morphiæ hydrochl., gr. j.; pulv. acaciæ, gr. xij. M. Fiat pulv. In pulv. iv., dividendus. This plan will be found most beneficial in cases of acute sciatica, when applied immediately below and behind the great trochanter.

[*Acetic æther*, applied by means of a camel-hair brush over the affected nerve, is sometimes very useful. It may be repeated after a short interval. If applied too freely it will vesicate.]

Chloroform a few years since was quite unknown, but all practitioners are now so well acquainted with its virtues that to describe it more minutely would be superfluous. It has been used as a local remedy in neuralgia, and apparently with the best effects. The best way to apply it is by means of folds of lint, saturated with chloroform, which are to be placed upon the painful part, and covered over with oiled silk, so as to prevent evaporation. Great benefit has also occasionally arisen from the employment of an ointment composed of one drachm of chloroform to one ounce of lard, smeared over the painful nerve.—*Transactions Prov. Med. and Surg. Association, Vol.* 19, *p.* 29.

131.—ON THE EFFECTS OF LEAD UPON THE SYSTEM.

By Dr. James Alderson, F.R.S.

[The preliminary signs induced by the action of lead upon the system are more quickly perceptible after the poison has been taken in by the respiratory apparatus than by the digestive organs. The sign which first appears is a discolouration of the gums. Those parts nearest the teeth for one or two lines in length acquire a bluish, or grayish slate colour, other parts of the gums also become slightly tinged with blue. In some cases there is evident congestion, and the slightest touch causes hemorrhage. The teeth, also, sometimes acquire a brown tinge, and become brittle, though these are uncertain signs. The next sign is in the complexion; a transparent waxy tint being observable in the countenance, giving an appearance of excessive delicacy. The next change is that the face becomes more emaciated

than the rest of the body, and assumes an anxious and depressed expression. All these signs may continue for a long time, and the workman may, though with impaired vigour, perform the duties of his calling. Before actual colic comes on, two new symptoms make their appearance, viz., pain and constipation. Speaking of these Dr. Alderson says:]

These two symptoms—constipation and pain—are the most prominent characteristics of the disease. The pain is chiefly confined to the region of the umbilicus; it is of a twisting, grinding kind; by some it is described as communicating the sensation of tearing the bowels, and on this account it has obtained among the German miners the name of Hütten Katze, or cat of the foundry, descriptive of the torments which convey the sensation of the intestines being torn to pieces by a cat. By others it is described as a sort of constriction or compression, as if produced by a heavy weight on the abdomen: in this last case the pains are seldom so acute, but few intervals of ease are obtained.

The position of the patient during the paroxysm is worthy of notice. At one time he lies flat upon his face, and then rapidly changes his position; at another, he lies doubled up, with the legs bent upon the body; then rises suddenly and walks, pressing the body with his hands, until a heavier paroxysm constrains him once again to seek relief in bed. The restlessness is excessive, and the whole attention of the patient is absorbed in what is passing within the abdomen. In the intervals of the severer paroxysm, there is merely a mitigation of pain, and not entire freedom from suffering. As a general rule, the violence of the pain is balanced by a more decided remission. It is difficult to explain on what these alternations of pain and comparative ease depend. It is remarked that the paroxysms occur more frequently during the night; and in this they assimilate with all nervous affections, in which a sense of the difficulty of obtaining assistance is an aggravating adjunct.

It is most important to observe one characteristic of the pain—viz, that it is not increased by pressure, but, on the contrary, is almost invariably relieved by it, at least when suitably applied. The patient's attitudes, and his own efforts to modify his pain by pressure, indicate the value of some mode of supplying it. If the abdomen be tapped by the hand, or the pressure be made over a small space, the pain will be exacerbated; but if the whole hand, or both together, be pressed over a large surface, and the force be applied gradually, a certain degree of relief will be experienced.

The constipation is usually in proportion to the pain; but varies much in different cases, and sometimes is the first symptom of the absorption of lead. Several days will frequently elapse without any evacuation, and without the individual feeling much inconvenience. The bowels, at first sluggish, part with their contents with difficulty and obstinacy.

The abdomen becomes retracted and drawn towards the spine, and the patient, as we have before noticed, seeks to assume a bent position of the body. This retracted, drawn condition of the abdomen, is more frequently to be observed in the chronic cases.

On examination by the hand the parietes are found hard and resisting, and the tension of the muscles is not relaxed even when the knees are drawn up, and the attention of the patient is purposely diverted. Andral gave a case in which a tumour of the abdomen was stimulated by this contracted state of the muscles, and in which, after the subsiding of the pain, the abdomen resumed the natural pliability.

It is not unusual to find tenesmus. The French and German authors are minute, I think, to an unnecessary and therefore reprehensible extent in their observations of the state of the rectum, during the paroxysm of pain, which they describe, after examination, as being in a state of alternate contraction and relaxation.

Nausea, accompanied by eructations, is a frequent symptom, and it is succeeded by vomiting, which is effected with difficulty, and with much apparent suffering; it usually follows a violent paroxysm of pain. The secretion from the kidneys is diminished in quantity and often passed with difficulty; the perspiration, indeed, being the only secretion which is not interfered with. The intellect throughout the disease remains unimpaired, but the spirits fail and are depressed, so that when

the attack has been of long duration without relief, the courage to endure sinks in a remarkable degree, and despair takes full possession of the mind.

During convalescence there are frequent returns of constipation, even after full action of the bowels has been obtained, and the pain recurs and lingers. When at length the constipation and the pain have been entirely relieved, there is yet another distressing symptom to be noticed, in the want of sleep. On recovery, dyspepsia is suffered from, with all its usual train of discomforts, amongst which the most prominent is flatulence.—*Lancet, July* 31, *p.* 95.

[Dr. Alderson introduces a few philosophical considerations as to the cause of lead at one time producing colic, and at another paralysis.]

The water-gilder in metals is employed in a highly pernicious process, on account of the fumes of mercury to which he is constantly exposed while at work. It is not necessary to detain you by detailing the process; but the pernicious part of it consists in the volatilization by heat of the mercury, which is disengaged from an amalgam of mercury and gold at the time when the gold is deposited on the metal. The paralysis to which these artisans are subject differs entirely from that which affects the workers in lead. Mercurial tremblings are known to arise from the absorption into the blood of the fumes of mercury during respiration. They come on gradually, with an incapacity to direct the arms and hands; and this want of power to direct, increases to shaking, and then to trembling, and in time other parts of the body participate.

Now, we have all seen mercury given to its full constitutional effect, as evidenced by ulceration of the gums and complete salivation, and yet we have no record, that I am aware of, of mercury taken by the mouth having produced these tremblings. As far as we know at present, it would appear that it is requisite that mercury should be received into the blood by absorption through the lungs in the act of respiration, in order to occasion these tremblings. The inquiry, then, naturally suggests itself, whether any similar results may attend the same mode of absorption of lead. As far as the making of litharge and of minium is concerned, there can be no doubt of the fact, that the metal is in precisely the same state as the mercury, passing off, probably, in the form of oxide, volatilized by heat; and these fumes are similarly received into the blood through the fine membrane of the air-cells by endosmotic action—that is, both the metals are volatilized by heat, and both similarly offered to the lungs during the respiration; but in the case of the carbonate, which is floating in the atmosphere, as dust in a manufactory, or diffused in combination with a volatile substance, as turpentine, it may appear that there is some difficulty in reconciling the circumstances, since the carbonate of lead is an insoluble salt. But so also are the carbonates of magnesia and soda, and lime and iron; and yet under certain circumstances an extra equivalent of carbonic acid may be given to each of these preparations, and with only a slight change of property the carbonates (now properly become bicarbonates or supercarbonates) are rendered soluble. The clear solution of magnesia, as it is called, is an instance of the change. The solution has acquired a slightly bitter taste, but the magnesia is dissolved. Soda-water contains soda in the state of supercarbonate; carbonate of lime takes on the same state in nature, and in this way contributes to that beautiful process by which plants are enabled to be nourished through the endosmosic action of their spongioles. Further, I may observe that it is consequence of the lime being in this state, with excess of carbonic acid, and *in solution*, that Dr. Clark has invented his process, by which water, rendered hard by this supercarbonate of lime, may be made soft for domestic purposes. It is done thus: to this solution of the bicarbonate of lime he adds the hydrate in definite proportion, which, combining with the equivalent of carbonic acid in excess, causes nearly the whole to be precipitated in the form of the common insoluble carbonate. Iron in all chalybeate waters is probably in the same condition.

The only difficulty now seems to consist in our being able to trace the source of the extra equivalent of carbonic acid to make the carbonate of lead floating in the atmosphere soluble as a bicarbonate. Now, free carbonic acid is constantly being given off by the lungs in respiration; and when we remember that these very minute emanations are presented to the air-cells at the very time when this living stream of free carbonic acid, *in a nascent state*, is being separated from the venous blood, can we doubt, under all the circumstances of the parity of symptoms pro-

duced by mercury, that such change may take place—viz., that the carbonate of lead may become soluble, and be received into the blood.

Thus, then, as we have seen that mercurial paralysis is produced by absorption of the volatilized mercury through the lungs, so, from analogy, I believe that the paralysis of lead, in its acute form, is the consequence of the absorption of *that* metal through the lungs also, whether in the state of fumes or of carbonate; colic being the acute result of the reception of the metal through the alimentary canal, which may or may not be followed by a chronic form of paralysis, from the subsequent more intimate absorption of the metal.

I have great reason for believing that the acute form of paralysis, produced by inhalation, differs in character from the chronic form which follows colic, and arises from the reception of lead in any form through the medium of the alimentary canal, as in poisoned water and other casual modes of introduction.

Though lead colic is an acute disease, the treatment may be pursued without much doubtful anxiety as to the ultimate result. Unlike the painful uncertainty which accompanies our measures to combat with diseases of inflammatory type, there is here every assurance of a successful issue, and if it be a first attack, and uncomplicated with paralysis—even though the symptoms be in excess severe—there is every probability that speedy relief will be afforded. In La Charité, an empirical practice has been followed for many years, which, according to all the French authorities, has been attended with much success. It consists merely in an extension of what was the practice of the ancients, as laid down by Nicander and Celsus, who prescribed vomiting and purging as the treatment for poisoning by lead, as well as by other metals.

We now proceed to reason from our own views of the nature and seat of the disease. Although we are ready to admit that the whole digestive canal is at times involved, we cannot doubt that the specific seat of colic is in the large intestine. Nausea and vomiting frequently occur, but they are only accompaniments of the peculiar feature of the disease, the *pain in the abdomen*, and the *constipation*; and hence it is that, in this country, emetics have been less freely used, but these remedies have rather been resorted to which are known, from experience, to relieve the one and to remove the other. The great desideratum, therefore, has been, to choose the most certain, and, at the same time, the least distressing purgatives, the action of which is comparatively less interfered with by a combination with opiates. There are other adjunctive measures used with a view to assist in removing the poison, of which I shall speak hereafter.

As far as we can judge from the imperfect data we possess in this country, there is no reason to believe that our treatment is less successful than that of our neighbours. Calomel alone, or in combination with the compound extract of colocynth of our pharmacopœia, and with opium, is the aperient which may most safely be relied on in all stages—even during sickness; not, however, omitting to guard against the probability of the constitutional effect taking place, and superseding the purgative. The combination of croton-oil prevents such result, by accelerating the action; and as all remedies have their specific effect upon different portions of the canal, we secure our object better by combination. Whenever the above combination has failed to succeed, we have still a resource in the use of croton-oil in full dose. Its action in this disease is speedy and safe: a couple of hours scarcely elapses without satisfactory result.

This remedy is now used in France; and Tanquerel, though he has landed the practice of La Charité, is so free from prejudice, that he has adopted it very extensively. I must remark, while adverting to this author, on the singularity that, after a lapse of thirteen years since his publication, the "Edinburgh Journal" has just brought it into prominent notice by an able review. It is possibly unfortunate for the interest of these lectures, which rested mainly on the freshness of the subject, that this review has appeared since I began to prepare them. I regret this on account of those who have the trouble of listening to me. But to return.

Castor-oil is a favourite remedy in self-treatment at the manufactories, and, no doubt, is of the greatest value in the earlier symptoms. The women, who are more careful of self-management than the men, have frequent recourse to it in the beginning of indisposition, and in this way perhaps obtain that protection which has been attributed to other causes. Castor-oil may alleviate by its solvent as well

as by its aperient power,—lead being miscible with oil; such particles as are delayed in the intestinal canal, ready for future absorption, may be taken up by the oil and carried away.

The warm bath has been much used in this country. It was observed as long ago as by the first Dr. Warren, that while the patient was in the bath he was free from pain, but that on emerging the suffering returned. Dr. John Wilson thought he obtained more speedy relief by giving injections of large volumes of warm water while the patient was in the bath, with a view, as he states, of "evacuating the morbid secretions of the intestines."

The bath is now used with the sulphide of potassium, in the proportion of four ounces to thirty gallons; and Dr. Pereira finds this bath highly effectual in relieving even acute cases. The skin becomes immediately blackened from the formation of the sulphide of lead, and even after several baths and ablutions with soap. On emerging from the bath, the axilla, the abdomen, the inside of the thighs, the palms of the hands, the back, and all parts where hair is found, are the localities of the peculiar chemical change.

It may not be altogether useless to consider the mode in which the sulphide bath may operate very beneficially; for it may possibly have occurred to others, as it has to myself, that the specific effect is not so unanswerably certain as some of the highest authorities believe. It is probable that a double current would be set up by endosmosic action proportioned to some power of the density of the fluids in the cellular tissue and in the bath, which will be favoured by the soddening effect of the bath itself, and thus the comparatively inert sulphide of lead will be formed; but if we examine the localities of the chemical change, we find those of the sebaceous glands and hair follicles are the principal; and this would rather lead us to believe that much of the discolouration is to be attributed to the mechanical entanglement presented to the carbonate by the hairs and the peculiar unctuous secretion at their base. The observations, however, of Dr. De Mussy are important in support of the opinion that the lead found in the surface is exuded from the pores, after having been taken into the system with the food, since he describes the abdomen of one of his patients as having become entirely black; and the case was one in which there could have been no possibility of exposure to emanations so as to have rendered a surface accumulation a tenable supposition.

The pains which we have described as occurring in the limbs, and which are considered by the French (erroneously, as we think,) to be a separate disease, are to be relieved by the use of the bath; opiates are also indispensable, as the increase of distress during the night renders sleep otherwise unattainable. A more difficult subject for discussion now lies before us in the cure of *paralysis from lead*. In this form of the disease, the change of colour, the impaired muscular power, and the wasting of the paralysed muscles, demonstrate that there is an almost broken constitution to deal with, and one which would fail to endure the trial of very active measures. In colic we find an apparent wasting of the solids, especially indicated in the shrinking of the features; but this seeming emaciation is so soon recovered from, the form so rapidly restored to its usual proportions, and the complexion to a more natural hue, that it cannot but be regarded as merely illusory. In paralysis, however, there is not a seeming, but a real change in the structure of the muscles. There is actual emaciation, and it is one of the symptoms from which, when appearing in excess, we should draw the most unfavourable conclusions as to the prospect of final recovery, for here, indeed, the altered and impoverished condition of the blood is distinctly manifest.

After paralysis has commenced, the immediate removal from the poisonous influence is the first necessary step, without which all plans of treatment would be useless. After removal, such acute cases as have resulted upon a short exposure will be easily restored. The chronic form, however, especially when frequent attacks of colic have preceded, is much more difficult to manage. It is obvious that the first step must be to free the nervous and muscular tissue from the offending cause, and action on the whole digestive canal should be induced and followed up, in a mode as little calculated as possible to depress the already debilitated powers of the patient. The bath (the sulphide bath) is here again useful. Some who are well versed in physics, and who know their value in the treatment of disease, have proposed the use of electricity in these cases, and not without good reason

and apparent success. Dr. Golding Bird has noticed the subject in the "Guy's Hospital Reports" for 1841. Of the two forms—galvanism and electricity—he prefers the latter, from its higher state of tension, and employs it in the form of sparks. In amaurosis there is no doubt, I think, that the electrical form is to be preferred, because the stimulus is capable of immediate application to the conjunctiva by means of the brush; but in paralysis of the extremities I should incline to prefer the galvanic form, because we can perceive and reason on its mode of action upon the immediate cause of the disease. The low state of intensity and the large amount of chemical power which especially characterize galvanism render it an instrument of great power and value; and I should propose to apply it thus:—Our positive metal we may consider to be the lead in the nerves and muscles and tissues, and our negative metal, plates of copper, which we must attach to the limb itself; a weak solution of acetic acid may form the oxidating and connecting link. I choose acetic acid, because the acetate of lead is soluble, and there is every ground for reasoning that the chemical and galvanic actions set up will cause the lead to be withdrawn from the muscles.

It is usual to give tonics, and in a safe form there can be no doubt of their general efficacy, but of the class of alkaloids, such as strychnia, we must admit that the danger of their use hardly excuses such experimental treatment without the greatest caution. My own recollection of the reputed success of the use of strychnia many years ago, in France, coupled with my knowledge at the same time that these reports were unsupported by real evidence, makes me very dubious of later statements on this subject.

The compositor, who, in addition to other hardships, has often to labour through the night, and seek what rest he may during the hours of sunshine, is a frequent subject of paralysis, but he is rarely attacked by colic. The types, which are composed of a metal having lead for its basis, are obliged to be frequently washed, to free them from the ink, and are sometimes placed before a fire to dry. The ink is composed of linseed-oil and lamp-black, thinned by turpentine. Lead is soluble in oil, and diffusible by turpentine, and heat assists the diffusion. The handling also favours the diffusion, and in a certain degree offers opportunity for absorption by contact with the sentient extremities of the fingers, a part which perhaps is as vulnerable as any external surface covered by epidermis. I am myself disposed to think that the reception of the poison is mainly attributable to respiration, else how can we account for the amaurosis which is not unfrequently found among compositors? It is obvious that portions may be inhaled in the process of cleaning just alluded to. The compositor is often also of intemperate habits, and the vapour from the lungs, being charged with spirit, diffuses the lead more easily, and favours the absorption.

The plumber and the potter are both exposed to the influence of lead: the former, not only from handling the metal, but also from emanations during the process of soldering. The solder, composed of equal parts of tin and lead, is applied by heat, in combination with resin, which is the residue of the distillation of turpentine. This is another instance of the influence of turpentine assisting the action of lead on the human frame. Two processes involving lead are carried on by the potter: one consists in dipping the biscuit-ware into the glaze, which is a solution of litharge; and another is the burning in. They are performed by different workmen, and it is those who apply the heat that suffer.

The glass-maker may be classed with the potter: lead, in the form of silicate, passes off with the heat used to favour the manipulations.

The sealing-wax makers, who formerly suffered from mercurial tremblings only, from the use of cinnabar to colour the wax, now suffer, in addition, from the use of lead. The introduction of new colours, as white and yellow, has included the carbonate and the chromate of lead in the manufacture.

A size containing litharge is used in glazing visiting-cards, from which the workmen occasionally suffer. The invention, at best, is but a clumsy one, as the cards lose their whiteness on exposure to hydro-sulphuric acid. For the same reason I should argue that cosmetics never could have been composed of lead, notwithstanding that the French insist upon the fact. It seems hardly likely that it should retain its colour in the vitiated atmosphere of crowded rooms, abounding in hydro-sulphuric acid. The same observation does not apply to the hair-dye, which is

perhaps included in what they call cosmetics; for the more hydro-sulphuric acid, the deeper the tint, which is the desideratum.—*Lancet, Sept.* 4, 1852, *p.* 212.

[The following extract is taken from a review of the works of Dr. Alderson and Mr. James Bower Harrison. It is an interesting inquiry as to what is the amount of impregnation with lead which renders water dangerous. Mr. Herapath has seen injurious effects produced when the water contained only one part in 500,000. Dr. Smith, of Aberdeen, believes that 1-20th of a grain of lead in one gallon of water, or one part in 1,400,000 parts of water, will not produce injury; and that the limit of danger is somewhere between the 1-10th and 1-20th of a grain to the gallon. Dr. Dyce, another Aberdeen physician, also gives similar evidence. Both Dr. Alderson and Mr. Harrison, however, afford different testimony. Soft water readily attacks lead, forming the hydrated oxide of the metal. Water dissolves a large portion of this, and on carbonic acid uniting with it, the insoluble carbonate is precipitated; an excess of carbonic acid, however, so as to convert it into a bicarbonate, renders it again soluble.]

Suppose, however, that the quantity of carbonic acid present is just sufficient to convert the whole of the oxide into an insoluble carbonate; this gradually falls as an impalpable powder to the bottom of the cistern, whence it is very likely to be stirred up by every fresh supply of water, and thus carried forwards into the service-pipes. So that, whether dissolved as the hydrated oxide or the bicarbonate, or suspended as the insoluble carbonate, it is liable to gain admission into the human body, and thus to produce incalculable mischief.

"There is another instance," says Dr. Alderson, "in which the presence of lead, under apparently similar circumstances, may be found to vary. Water running in leaden pipes, or pumped from a leaden pump, *may* show no trace of the metal; but after a delay of twelve hours or more in the pipes, or in the body of the pump, which very often happens, the water will be found to contain it in smaller or greater degree. As an illustration of this, I quote from Dr. Clark's published evidence in the report of the General Board of Health, on the supply in Aberdeen: —'The water is brought from the iron mains in the streets to the houses by means of leaden pipes, and in general without any disadvantage, because the supply from the pipes is constant, and the use of the stop-cock very frequent in a family; but in my class-rooms and laboratory, I find that when the pipe has been out of use for a few days, the water taken from it affords a trace of lead, which disappears when the water has been allowed to run briskly from the stop-cock for a few minutes.' It is curious that Dr. Clark is an Aberdeen M.D., and is thus describing the identical water which is spoken of in the 'Report of the Chemical Commissioners' as perfectly innocuous."

Dr. Christison has shown that the same thing is true of Edinburgh water, which may be kept running over the lead with impunity, though it cannot be left standing in the metal for any length of time without becoming charged with it; and the Board of Health have with much candour acknowledged, that in their opinion "minor injuries from such partial contaminations may occur, and pass unnoticed." —*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 322.

132.—CASE OF LEAD POISONING.

By Dr. Edward Murphy, of New Harmony, Indiana.

[It is important to observe, that many cases of lead-poisoning seem to arise from the water used in the preparation of soda water, and thus supplied by public companies. Mr. R., merchant, aged 42, temperate, and hitherto very healthy, was attacked in February with intermitting abdominal pain, and obstinate constipation, which was treated as peritonitis. The constipation only yielded in several days after large doses of medicine. Being attacked in March, while at Louisville, with the same symptoms, he was attended there by a distinguished physician, who pronounced the disease abdominal neuralgia, and treated it accordingly. Dr. Murphy continues:]

"From that time up to 22nd February, 1846, he has been suffering, almost constantly, with excessive pain in his abdomen, radiating from thence to all parts of his

body, often of very great severity; obstinate constipation of his bowels, accompanied often with nausea and vomiting (the patient attributing the nausea and vomiting to the *very* large doses of opium which he was sometimes obliged to take); was frequently confined to his bed; he lost flesh and strength, notwithstanding a constant good appetite, and had a bloated, though anæmic, countenance. He had very much the appearance of a person in cachexia from malignant disease. There was a dirty yellow colour of the skin, with a yellow discoloration of the albuginea oculi, simulating jaundice the whole time. Some time during this period, he became affected with slight paralysis of the extensor muscles of the fingers of the right hand, with the exception of the index, which rendered him unable to write; his vision became imperfect; there was great mental prostration, approaching hypochondriasis,—indeed, he was totally unable to do business throughout the greater part of this period, from mental imbecility, sometimes being unable to perform the minutest calculation, or to attend his customers, who generally considered him insane; was very irritable the whole time.

"About this time, Mr. R. was attacked with what was thought to be apoplectic fits, having had four or five, and on the 24th I was called in consultation. He was confined to his bed, very pale and feeble; sensible, although very weak in mind; would give an answer in relation to his case, and immediately forgot that he had done so; sometimes became alarmed at persons present, and again was much terrified at absent imaginary enemies, who were conspiring against him—a state resembling delirium tremens; speech, faltering and hesitating; sight defective. His face was frequently affected with choreic convulsions, when he would complain of severe shooting pains through his body, and of which he was in constant dread; tongue, soft and broad; pulse, feeble, but almost natural as respects frequency; bowels, constipated; stomach, very irritable; chest perfectly sound; sounds and rhythm of the heart natural; nothing unusual in the appearance of his urine; although very feeble, would sit up for a short time when desired. Considering it impossible that an individual should have four or five fits of apoplexy in two or three days, without any lesion to the brain, or symptoms denoting such, and on carefully interrogating his family—the physician in attendance not having seen him in a fit—I made out his attacks to be of an epileptiform character, being preceded by the horrid scream of epileptics, accompanied with evident convulsions. I advised opening the bowels by active purgatives, opiates, nourishing diet, blister to the nuchæ, and sulph. quinia, when the bowels were well opened, and took my leave, after assuring his family that I did not consider his present attack to be apoplexy, but probably a part of his old complaint, and gave an unfavourable prognosis.

"Mr. R. remained in nearly the same state, but without another fit, until the third of March, when I was again called in and associated in the treatment of his case. By persistence in the above remedies, to which were added wine and brandy, he very gradually recovered to his late state of health. When so far recovered as to be able to sit up, his defective vision became almost complete amaurosis, which continued some time, then gradually disappeared, but was not entirely recovered from; the patient was fully of the opinion that it was caused by the quinia he had been taking, although never more than six grains in the twenty-four hours, and with no idiosyncrasy to its action. There was also, at this time, increased paralysis of the right hand, the left also becoming slightly paralysed.

"From the 16th of March, at which my attendance ceased, up to January, 1847, when he placed himself in my hands for treatment of fistula of the anus, complicated with fissure, he continued to have the same attacks, of greater or less severity, with only short intervals of repose, being nearly worn out with constant suffering and bad health. As opium was his only relief, he generally prescribed for himself throughout the lengthened period of his sickness, except when his attack was unusually severe. After the cure of his fistula, his disease returned with greater severity, and of a more alarming appearance than ever.

"On the 10th of June, in the absence of his regular physician, I was again consulted. Mr. R. was confined to his chamber and almost to his bed, the mere wreck of his former self, and scarcely able to sit up, weeping from excruciating pain, and in such a state of mind as to express a wish to commit suicide, and indeed he was afraid he should do so. His face, pale and wan, was marked by the deepest despair,

from extreme suffering, imploring me strongly for relief; wrists entirely dropped, from complete paralysis—being perfectly helpless, and unable to straighten either hand, unless by the aid of the opposite arm, and requiring all the care of an infant, in being fed, washed, &c., yet a comparatively good grip with his hands. His extremities were dwindled away to the mere sheaths of the muscles; his abdomen seemed to be the centre, as usual, from which his pain radiated, and it was with the greatest difficulty that I could persuade him, after a careful examination, of the non-existence of organic disease there. The slightest touch of the skin over the umbilicus, and indeed over other parts of the body, produced such terrific pain as almost to throw him into convulsions, producing all the effects of an electric shock; while the greatest pressure over the same place gave him no uneasiness, but rather relief: his bowels were always constipated, unless moved by medicine. Was the constipation produced by the large quantity of opium which was taken, or did it depend on paralysis of the muscular tunic of the intestines? There was sometimes vomiting of a greenish watery fluid; tongue flat and broad; pulse very feeble, and more frequent than natural; his cachectic appearance was that of a person in the last stage of malignant disease; appetite comparatively good; his suffering was much more intense during the night than the day, unless relieved by excessively large doses of opium. From the balls of both thumbs, which were much atrophied, excruciating pains would arise, shooting with great severity up his arms and shoulders, to the back of his neck and head; the shoulders were affected with constant pain, especially the deltoid muscles, which also were slightly paralysed. The pain in his lower extremities was also very severe, commencing in the soles of his feet, which were so sore that he dreaded to touch the floor with them, and shooting up the limbs to the lumbar region with dreadful suffering. There was also at this time a new source of suffering—shooting pain through his testicles, of such severity as almost to produce fainting; indeed, to see him in his suffering, was the most heart-rending sight I ever witnessed, and I was greatly astonished to see how any human being could so long survive so much and such constant misery.

"I stated to Mr. R., which I had done several times before, though not when attending him, that he presented in the strongest light all the symptoms of poisoning with lead, and had it been possible that he could in any manner have been exposed to its influence, I should have no hesitation in attributing all his sufferings and bad health to that cause: but Mr. R. was a merchant, and in no way liable to be acted upon by lead, or any of its salts, in his business. There were no lead pipes or utensils used about the house; nor had he taken it in any form as medicine during his whole life. The autumn before the commencement of his sickness, he built a new store and repaired his house, which was painted in the usual manner; and this was the only exposure to the influence of lead to which he could refer. I, however, considered that this could not be the cause in itself, as I thought it impossible that its influence could have extended over a period of nearly four years.

"His case seemed perfectly hopeless, and I firmly believed he would never leave his chamber again alive. As all the remedies recommended for neuralgia had been exhausted without any benefit, and as he had taken so much medicine from time to time, that his stomach gave way almost at the bare mention of it, I felt very much at a loss what to advise. I, however, advised Mr. R. to submit to an alterative course of mercury, as a last resort; giving him to understand that I considered neuralgia, convulsions, and various anomalous affections, might depend upon a cachectic state of the body, from some poison either taken into or generated within it, and preventing its proper nutrition, and which might be controlled or removed by a course of mercury, as constitutional syphilis and malaria often were; at any rate, it was possible it might produce a new action in his system. This he dreaded very much, and offered a great many objections, which I removed; but he declined for the present.

"June 17.—To-day Mr. R. consented to take mercury. I gave him a one-grain blue pill, four times a-day, with an occasional aperient, and continued the opium to relieve his sufferings. I applied blisters over various parts of his spine, which increased his pain so much, that I was obliged to heal them directly. This treatment was continued about three weeks, with an occasional rubbing-in of mercurial ointment over his abdomen, when a considerable improvement was manifest. Treatment continued.

"July 15.—Was summoned to Mr. R., when I expected another unfavourable turn in his disease had taken place, but was agreeably disappointed in finding him much relieved and improving, and down stairs. The statement which I had before repeatedly made to him, that he presented all the phenomena of poisoning with lead, made a very strong impression on his mind, so much so, that it constantly occupied his mind, and just brought to his recollection that he had been in the habit, for many years, of chewing lead, and that this habit extended so far back that he was unable to date its commencement. Formerly, being very fond of his gun, he frequently took hunting excursions, on which occasions he always had a piece of bullet or shot in his mouth; when in the store, he seldom ever passed by the box containing the shot without putting some in his mouth to chew. But what he most liked, from its agreeable taste, and of which he chewed a great deal, was the lead lining of tea-boxes; besides he considered that the pressure of the teeth on the metal enabled him the better to bear his pain. I immediately replied, that the cause of all his sufferings and bad health was perfectly clear, and at once assured him that he might be yet a sound man. I at once examined his gums, for Dr. Burton's symptom, and found the blue line over four or five teeth. I considered the case fairly made out, and never felt so much rejoiced as at that moment, to think that an individual, after such a prolonged period of suffering and bad health, whom all considered as beyond recovery, and almost in the grave, should, by this discovery, be yet restored to health and usefulness. Not so my patient, however; he was very sceptical of my prognosis, not conceiving it possible that his disease could have originated from what to him appeared so slight a cause. I assured him that his case always appeared a very strange one to me, and I was always astonished to think that a healthy individual, as he had always been, should have been reduced to such a protracted state of bad health, without any organic disease, unless from some evident cause, which had, at last, been discovered; that it was now rendered almost certain, that his first attack—which was considered acute peritonitis—and many subsequent ones, were attacks of lead colic. Further, that his attack of autumnal fever, from which I date the commencement of his disease, had probably produced a debilitated state of the body, rendering it more susceptible to the influence of minute portions of the metal. Also, that nearly every symptom which writers have laid down as indicating poisoning with lead, had in this case been repeatedly and severely manifested; and the only reason why he did not before recover, was the continued renewal of the poison whenever he was present where it could be obtained. Also, that we were now in a fair way of proving it; the cause being discovered, would in future be avoided, and he would continue well. I pointed to the present amelioration of his disease from the treatment he was pursuing, as a favourable indication that it depended on some removable cause, as idiopathic neuralgia of such long standing was seldom benefited by any treatment. From all this, it will be seen that I had to urge a number of reasons to convince my patient of the real nature of his case, but without convincing him. I added acid sulph. aromat. to the former remedies, and by the 1st of August his pains had nearly entirely subsided, his bowels were acting naturally, and he left off medicine, even opium, for the first time since the commencement of his sickness. I ordered splints to his wrists and hands, which gradually recovered their natural state.

"Mr. R. entirely recovered his health in every respect, and has continued well up to the present time (February, 1850), being again a *strong, active* business man. *He thinks* that the extensor muscles of his wrists and fingers are not *quite* so strong as before his disease commenced; which is probably true, as muscles which have long been inactive require frequent and strong exercise to recover the proper tone, which cannot be given to these muscles; their function being merely extension, they cannot be exercised to any extent: however, the defect is very slight indeed.

"*Remarks.*—1st. In consulting all the authorities within my reach, I have not found a single case having any resemblance to this: yet nearly every symptom described by the various authors I have consulted as belonging to or arising from poisoning with lead, with the exception of apoplexy, which generally terminates the case in death, were all combined in this case, and fully manifested. Indeed, this case would in *itself* afford all the materials for a complete history of the toxicological effects of lead on the human system. It also shows that the effects are

the same, whether produced by the metal itself, or its various salts; probably the former is converted into one of the latter, in all instances, before it is absorbed into the system. Further, I think it may be reasonably inferred, from this case, that lead is a cumulative poison; and, when once the body has been brought under its influence, very minute quantities are sufficient to keep up its effects. Also that, although the effects of poisoning with lead are very distressing, yet it cannot be considered as very dangerous to life, even when long continued in small quantities.

"2nd. We have here additional evidence of the effects of a latent poison, either taken into or generated within the body, in producing and keeping up neuralgia, convulsions, cachexia, mental imbecility, paralysis, amaurosis, &c., showing the necessity of tracing these affections, and various other anomalous phenomena, to causes of this nature, in many instances.

"3rd. The beneficial influence of mercury in controlling the effects, or removing latent poisons from the body, was strikingly manifested in this case. In consequence of the low state of the patient, I did not like to venture on a larger dose than the one given, believing it to be more advantageous to introduce the medicine gradually, than to produce a sudden or violent effect, which I considered would only add to his danger. Now, in inflammation, the case is different; this process being certain to damage the part in which it is located, or to destroy life if not checked, we wish to have the influence of the medicine on the system as soon as it can be produced, where the case demands it. It was really curious to see how symptom after symptom gradually gave way from day to day, the patient gaining flesh and strength, and yet the only sensible effect of the medicine ascertainable was an indistinct mercurial fetor of the breath once or twice.

"4th. This case is very instructive in another point of view,—*the great necessity in all cases of tracing diseases to their causes;* exemplifying the old adage, 'that knowing the disease is half its cure;' for it was only by the frequent repetition that his case resembled the effects of lead on the body, that the patient was brought to the recollection of his almost fatal habit.

"5th. As the great drawback to the progress of the science of medicine is the almost universal tendency amongst its cultivators to draw sweeping generalizations from a single or a few cases, I shall close this too lengthy paper before I indulge *too much* that way; yet a great many beautiful illustrations of disease, and useful reflections, might, in my opinion, be drawn from this single case. I, however, venture to think that no one, in reading the history of this case, its happy termination in perfect and robust health, the patient continuing so up to the present time, can for a moment doubt, but that all the extreme suffering and disease before mentioned were rightly attributed to the cause assigned."—*Western Lancet, July*, 1850, (pp. 273-280)—*Brit. and For. Medico-Chirurgical Review, Oct.* 1852, *p.* 344.

133.—ON THE EMPLOYMENT OF IODIDE OF POTASSIUM AS A REMEDY FOR THE AFFECTIONS CAUSED BY LEAD AND MERCURY.

By M. Melsens. Translated by Dr. William Budd, Physician to the Bristol Royal Infirmary.

[The great practical value of the paper under consideration will become readily apparent to all our readers. From the investigations of M. Melsens, it would appear to be established "that iodide of potassium is not only a radical cure for saturnine and mercurial poisoning, but equally sure in preventing the injurious effects produced by emanations from lead and mercury." The bearing of these facts upon the therapeutic use of these agents, need scarcely be alluded to. The following is the mode in which M. Melsens supposes this salt exerts its curative powers:]

In all cases of mercurial and saturnine poisoning, he assumes, and no doubt rightly, that the metallic substance is in actual union with the affected part or parts, and is retained there in the form of some *insoluble* compound.

According to his view, the iodide of potassium, after its absorption into the blood, combines with the metallic poison, and forms with it a new and *soluble* salt

—liberates the poison from its union with the injured part—dissolves it out, so to speak, from the damaged fibre, and sets it once more afloat in the circulation.

The new compound thus set at liberty (under the form, it is presumed, of a double iodide of mercury and potassium) he supposes to be eliminated through the kidney almost as soon as formed, in combination with any excess of iodide of potassium that may happen to be present. So that, both poison and remedy being cast out together, the cure may be said in a peculiar sense to be radical and complete.

[From cases under his observation, Dr. Budd had been led to the same conclusion. He relates a case of a man who was admitted into the Bristol Royal Infirmary three years ago, with secondary syphilis. Previous to his admission, he had taken mercury freely, *but none after entering the hospital.*]

The day after he came in, he was put under treatment by iodide of potassium in pretty free doses. My surprise was great on coming to the hospital a few days afterwards to find my patient profusely salivated. The swollen face, the peculiar state of the tongue, the loosened teeth, the ulcerated mouth, and the characteristic fetor, were all present. For many years I had not seen a severer case of mercurial ptyalism. And yet this man, as I specially ascertained—for I at first thought there might have been some mistake—had not taken a grain of mercury since his admission.

Under these circumstances, I came to the conclusion that a portion of the mercury administered some months before had become fixed in the body, and that the liberation of this mercury under the solvent influence of the iodide of potassium was the cause of the severe salivation under which the patient was now labouring. No other theory of the case, in fact, seemed admissible. It may be interesting to mention, that under a continuance of the iodide, not only the syphilitic affection soon got better, but the paralysis also was almost entirely removed.

Since the occurrence of this case, I have seen many others of exactly the same kind, in which mercurial ptyalism came on during the use of iodide of potassium, in persons who had taken mercury some weeks or months before, but none within a more recent period. On several occasions, indeed, the facts have been so striking, that I have been led to make them the subject of clinical remark. A very interesting example of it is under my eye at the present time, in which the same result, in a milder degree, has appeared to be produced by the free inunction of compound iodine ointment. The lady who is the subject of the ptyalism took a mild course of mercury about ten weeks ago, but was not then sensibly affected by it.

[The following are the chief practical heads of M. Melsens' work:]

The kidneys are the principal outlet of the iodide of potassium. It is even with extreme difficulty that this salt can be made to pass through the bowels into the stools.

Every mercurial compound which can possibly occur in the living economy, even metallic mercury itself, is soluble in iodide of potassium; the presence of the organic substances of the body does not hinder these reactions.

Neither sulphuric acid, nor sulphates, can serve as antidotes to slow poisoning by the salts or compounds of lead, the sulphate of lead being itself a slow but sure poison capable of killing vigorous dogs in twenty or thirty days.

In support of this assertion, M. Melsens remarks that the evidence commonly adduced is not sufficient to prove sulphuric acid to be an antidote to slow lead poisoning, although sulphate of magnesia may be properly given in cases of poisoning by a soluble salt of lead to act on the portion yet unabsorbed. Sulphate of lead, however, may be, and probably is, less readily absorbed than other compounds; but that sulphuric acid will reach lead already deposited in the system is quite unproved. Moreover, sulphate of lead is itself a poison, as can be shown by experiments on dogs, some of which are detailed. One dog was paralysed on the eleventh day after 108 grains of the pure sulphate had been given; he then refused food, and died epileptiform, emaciated, and in a state approaching scurvy on the 22nd. Another dog took 293 grains, and died on the 28th day, with similar symptoms.—*Translator.*]

Cure of gilders, and of workers in quicksilver.

The first patient subjected to the treatment was an old man at Bicetre, whose case has been recorded with full details by M. Guillot. He had been a gilder, and had lost the use of his limbs by the exercise of his calling. His sight was gone,

and he was, moreover, tormented by violent and constant pains. Iodide of potassium was administered every day, in the dose of 61 grains (four grammes). At the end of a fortnight's treatment he left the infirmary alone and without help, whereas on his admission he was obliged to be brought in a litter.

2. I saw a gilder in mercury, about twenty-five years old, treated by the iodide of potassium during three weeks. At the end of that time he could write with ease, whereas at the beginning it was perfectly impossible for him to write at all.

3. The only person on whom the iodide of potassium did not act with energy was an old man of seventy, a working gilder. He was only treated during a few days for a strong salivation; the treatment was given up.

Barthelemy Pichon was a working gilder. His memory was very feeble; his speech much embarrassed; and the tremors were so violent, that he could only be employed in the coarser operations of water or galvanic gilding. He belonged to the factory of M. Christofle.

In the beginning of 1844 he was six weeks at the Hôtel Dieu, but with small result. The 1st of June 1844, I let him have 3087 grains (200 grammes) of iodide of potassium in solution, recommending him to begin by taking a portion corresponding to 15 grains (one gramme) of the salt daily, increasing the quantity as he liked; guiding himself by the severity of his pains, and diminishing the dose when these pains should become too severe. After a few days' treatment he was seized with pains in the head and stomach, and had pimples over the body—symptoms which did not, however, prevent him from working constantly during the seventy days that his treatment lasted, and that were taken up in consuming the 3087 grains (200 grammes) of iodide of potassium. He followed his ordinary regimen, and changed his habits in nothing.

After the treatment, Pichon was completely cured. He wrote without shaking; he spoke glibly. According to the report of M. l'Eté, this workman, who before his treatment was unable to execute any but the coarsest works belonging to gilding on metal, after seventy days' treatment executed the most delicate processes. There was intense headache on one occasion during his treatment, but this was in sequel to a debauch, after which he had taken no medicine for three or four days. In order to recover the lost time, he took at one draught a dose which should have been distributed over several days. Immediately after this dose the pain in the head was so agonizing that he thought he should have gone mad.

5. A looking-glass maker, employed in one of the Brussels manufactories, put himself under treatment by iodide of potassium. Before he became a gilder, he had been a typographer. He trembled to such a degree as often to drop everything he held in his hand; his speech was slightly embarrassed; his legs supported him ill; he often made false steps; his strength failed him almost entirely. Three hundred and eight grains (20 grammes) of iodide of potassium, taken in ten days, scarcely affected him. As he belonged to a provident society of operative typographers, the medical attendant of the society desired, before continuing the iodide of potassium, to subject him to other treatment. He was of opinion that trembling of another character might complicate the mercurial trembling. A month afterwards he sent his patient back to me in exactly the same state as before. He was again placed under treatment by the iodide. Although this artizan had left his trade, the amendment following the treatment was very slow. He told me, nevertheless, that he felt his strength return daily; the tremors gradually disappeared. It was not, however, until he had taken 3087 grains (200 grammes) of iodide that the amendment was very marked. He scarcely trembled at all, his step was firm, his handwriting good; but his strength had not entirely returned. Observing that the cure in this patient was progressive, but slow, in spite of his withdrawal from his workshop, I ordered iodide of potassium to be used in frictions, under the form of iodine ointment. It was especially from this time that the recovery of strength became perceptible. It was not until towards the end of August, after three months' treatment, that he had entirely recovered.

I saw this workman again in the beginning of the month of November. He told me that his health and strength were much as they had been before he began the business of a looking-glass maker. In the month of April, 1849, he was perfectly well, and nothing remained of his old complaint.

This man only remained proof against the pernicious influence of the trade twenty-one months. Having entered the manufactory in March, 1846, the trembling came on in January, 1848. In questioning him in the presence of many of his comrades I made this observation, which appears to me important:—those workmen who are fond of salt resist the contamination longer than those who are not.

6. An operative in the same factory was affected with a trembling, which embarrassed him much in his work. His limbs were exceedingly weak; the slightest effort fatigued him. Sometimes objects dropped from his hands; his gait was insecure. His tremors were already of old standing: a year before, he was ill enough to keep his bed, and although relieved then, he remained weak after the treatment which was adopted.

From the 21st of March, 1848, to the 7th of May, he took 771 grains (50 grammes) of iodide of potassium. During the whole of this time he continued to work at silvering, as before, and, what is more important, his work in contact with mercury had almost doubled in the number of hours. Nevertheless, on the 7th of May the tremors were almost reduced to nothing. He took afterwards, up to the 22nd of June, about 1543 grains (100 grammes) of iodide of potassium. He often interrupted the salt for two or three days, taking it according to his own judgment, the severity of his pains being his guide. The 4th of September he was perfectly well; trembled little or not at all, and continued his calling without any recourse to medicine. During the whole of this time he never ceased to work, and was always in contact with the poison. His cure was accomplished without preventing him from gaining his livelihood and maintaining his family, and without any change in his regimen or habits.

[The following experiments show that the iodide of potassium renders medical treatment in poisoning by certain salts of mercury more active, and may occasion serious accident.]

For a long time past (from the year 1838-39 at least) M. Dumas has enjoined in his lectures, the importance of abstaining from common salt when calomel is given, and is desired to remain in the state of calomel in the digestive tube. He has recommended, on the contrary, the addition of sal-ammoniac to corrosive sublimate, in order to render it more stable and less easy to be decomposed when in contact with the fluids of the system. The work of M. Mialhe is sufficiently well-known for me to content myself with a simple reference to it. If the same doses of calomel are given to two dogs, and to one iodide of potassium is given at the same time, the dog which takes the iodide will be destroyed first, if the doses of the two salts are at all large. In a comparative experiment made on two dogs, chosen of the same age and strength, as near as may be, I obtained the following results:—The first took seven grains (0·500 gramme) of calomel in all, and about one drachm (four grammes) of iodide of potassium, administered in the following manner:—

1st day.—Rather more than three grains (0·200 gramme) of calomel and 30 grains (two grammes) of iodide of potassium.

2nd day.—Nothing.

3rd day.—Rather more than four grains of calomel (0·300 gramme) and 30 grains (two grammes) of iodide of potassium.

He died in the night of the fifth day. The same doses of calomel, without the iodide, scarcely affected the second dog at all. On the day of the death of the former he still took about one and a half grain (0·100 gramme) of calomel. He was then let alone for seven days. Nearly two and a half grains (0·150 gramme) of calomel did not prevent him from living five days longer. He had taken, therefore, twice as much calomel as the first dog, and had lived twelve days longer. He suffered, however, a good deal. I gave him at one dose as much calomel as was taken by the first in three days—namely, nearly eight grains (0·500 gramme), and on the morrow 30 grains (two grammes) of iodide of potassium. The symptoms grew worse; he died forty-eight hours afterwards, without any fresh administration of either calomel or iodide.

[The last selection we shall make is upon the treatment of the secondary and tertiary disorders of syphilis. M. Melsens says:]

The administration of iodide of potassium often causes intense suffering in patients who have been treated by mercurials. To what are these phenomena to be ascribed? According to the opinions put forth in this essay, it is at once seen

that when, in consecutive disorders of this class, iodide of potassium is given to individuals who have been treated by mercurial compounds, two distinct effects are produced by a single agent; first, the compounds of mercury fixed in the body are rendered soluble and active; and, secondly, a form is given to them which allows their (rapid) elimination. But by the very fact, the patient is subjected anew to a mercurial treatment by the compounds of mercury already present in the body.

If in the treatment of secondary syphilis iodide of potassium acts on its own account—a fact which I do not dispute—we must not, nevertheless, leave out of view the properties to which I have here desired to draw attention, for they must, without doubt, play an important part in the case. There ought to be a marked difference between the action of iodide of potassium on an individual free from mercurial compounds, and on one who holds mercurial compounds in his tissues. It results from the facts established in this memoir, taken as a whole,—whether they concern protection from poisoning, the aggravation of it even unto death, or finally, the cure of those already poisoned,—that with the treatment by iodide of potassium the cure is never obtained except by a preliminary poisoning—poisoning which the physician has completely the power to regulate according to the strength of the patient. It suffices for this to begin by administering the iodide in a small dose, as M. Guillot and I proposed as long as six years ago. For a man, it is well to begin with fifteen grains (one gramme) a day, increasing the dose if the patient bear it well. It seems to me that inferences of some importance to medicine may be drawn from the facts contained in this memoir. Indeed, the constant aggravation of the symptoms of poisoning upon the administration of iodide of potassium in excess, and in the elimination of the poison in a state of combination with one of the elements of the iodide, authorize us in saying that certain medicines act in the first instance on their own account; but may act at the same time by the agency of the materials they meet with in the living body. It is the duty of the physician, therefore, to inquire into the prior history of the patient, even more, perhaps, than physicians are in the habit of doing, when he is desirous of administering remedies having an action analogous to that of iodide of potassium to individuals formerly subjected to the influence of saturnine or mercurial compounds.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 201.

134.—ON CONCUSSION OF THE BRAIN.

By Dr. R. C. Williams.

[In a review of the works of Mr. Fergusson and Mr. Miller, by Dr. R. C. Williams, this gentleman states, that neither of the above-mentioned surgeons has defined the *real* nature of concussion of the brain. This has been more especially done by two French surgeons, who, however, have omitted all reference to the previous definition of our own eminent countryman, Dr. Bright. Dr. Williams says:]

Two eminent French surgeons, M. Nélaton, in his "Elements of Surgical Pathology," and M. Desnonvilliers, in the "Compendium of Surgery," commenced conjointly with the late M. A. Berard, and, since his lamented death, continued along with M. Gosselin, have each given an account of certain morbid appearances observed after death from concussion of the brain. M. Nélaton, it will be observed, attributes to Sanson the merit of having first pointed out the appearances described in the following extract:

"Sanson, who had a predilection for studying every question relating to injuries of the head, was the first to indicate an alteration of the substance of the brain, which he drew our attention to several times. The alteration in question consists in minute extravasations of blood, as large as the heads of small pins, disseminated in the substance of the brain. Since our attention was directed to this fact, we have discovered, under similar circumstances, these small miliary extravasations, which might be confounded, were we not upon our guard, with minute drops of blood presenting at the orifices of the vessels when a slice of brain is cut away. But that mistake is easily avoided; for, in the first case, the minute clot of blood can be removed with the point of the knife, while in the second it is fluid blood

that presents at the extremity of the vessel; and, moreover, it is possible to remove the little speck of blood and cause it to reappear several times in succession at the same point, by gently compressing the substance of the brain. It requires, no doubt, great care to always discover so slight a lesion; yet it will seldom escape observation, if we have the patience to first remove the pia mater and then pare away the brain in very thin slices. These extravasations of blood are found at the periphery and towards the centre of the brain; they occur equally at the point percussed and at points adjacent to it, and at others more or less remote. The small extravasations are sometimes numerous, sometimes few, and but five or six of them may be disseminated throughout the brain." (Nélaton, t. ii., p. 575.)

M. Nélaton then goes on to observe, that the alteration above described constantly exists in contusion of the brain also, and he thence infers that *concussion* must be regarded as a slight degree of *contusion*—an inference not warranted by the premises, as the appearance in question only shows, at the utmost, that blood-vessels are ruptured in both cases; and, finally, M. Nélaton says, it by no means follows that the minute extravasations of blood above described are present in every case of concussion of the brain, because it is quite conceivable that a shock may suffice to rupture some of the cerebral fibres, without being sufficiently energetic to rupture the blood-vessels also, and the opportunity of examining the brain only occurs in fatal cases of the accident, in which the severer shock capable of rupturing the blood-vessels has been inflicted. The second volume of M. Nélaton's work was published in 1849, and we do not know any earlier notice of Sanson's having made the observation, respecting the condition of the brain in concussion, attributed to him by M. Nélaton. There is no allusion to the subject in the "Nouveaux Eléments de Pathologie Méd. Chirurg.," by Roche and Sanson, in which the latter writer expressly treats of injuries of the head.

In the "Compendium of Surgery," by MM. Desnonvilliers and Gosselin, two fatal cases of concussion of the brain, with the *post-mortem* appearances, are recorded. The first of these cases was communicated by M. Bayard to M. Desnonvilliers, and is peculiarly interesting, because it adds another to the extremely few cases in which any account is given of the condition of the brain, where death occurred very soon after the accident; and in which, consequently, the appearances cannot be referred to changes produced by consecutive complications. The circumstances under which the injury was inflicted, were almost identical with those in Littré's celebrated case. A man, aged twenty-three, was arrested in the suburbs of Paris, and having threatened to commit suicide, was confined in a cell with his hands tied behind his back; when left alone, he dashed his head violently against the wall, fell senseless, and died in about *three quarters of an hour*. On dissection there was no fracture of the skull, no extravasation of blood, either between the dura mater and the bone, or on the surface or in the substance of the brain. Neither was there any contusion or laceration of that organ. The brain, moreover, presented its natural consistence; but throughout its substance were interspersed small specks of blood, and, on gently compressing the sliced brain between the fingers, fluid blood exuded from the vessels. In the second case death occurred *eight hours* after a fall from a considerable height. Several complications, however, existed in this case. There was fracture of the cranium, with depression, and slight laceration of the brain at one point, with slight contusion of the organ at the point diametrically opposite, but no blood was extravasated, either on the surface or in the substance of the brain. On slicing the brain, however, appearances similar to those seen in the preceding case were discovered.

M. Desnonvilliers admits the accuracy of the account, given by Littré, of the condition of the brain, in the well-known case recorded by that writer; and he thence concludes, that when concussion of the brain is immediately fatal, the only cognizable alteration is a contraction or shrinking of the organ; with that point, however, we are not at present concerned. But M. Desnonvilliers further infers, from the two cases of which an outline has been given above, that when the patient lives for some time, the anatomical characters of concussion consist in congestion of the vessels of the brain. And when the patient survives the affection, he thinks it may be fairly assumed that the organic changes are the same in kind but less in degree.

We need not stop to point out the differences between the anatomical characters described by M. Nélaton, and by M. Desnonvilliers; but it will be seen that Dr. Bright's account of the appearances observed after concussion of the brain, embodies those that are given by both the French writers; one of whom he anticipated by eighteen, and the other by twenty years.

We have not space to quote as fully from Dr. Bright as we could desire; but it is, perhaps, enough to say, that in his "Reports of Medical Cases, &c.," vol. ii., part 1, 1831, Dr. Bright describes at page 408 the "small clots from laceration . . . . . of the size of large pin-heads," occupying "the internal part of the brain," &c., and that at page 410 he writes as follows:

"What then is the immediate state of the brain producing the symptoms of concussion? Of this we can only judge from the nature of the injury traceable after death . . . . . and almost the only appearances which can be considered peculiar are the minute lacerations of the brain and vessels, which occur both upon the surface and deep in the substance of the brain; and we are led to conclude that the violence done to the brain, if it does not always go to the length of producing these appearances, has at least such a tendency, and that it is this rupture of the brain, or an approach to it, with some consequent congestion in the vessels, which gives rise to the peculiar symptoms of concussion."

And a little further on Dr. Bright comes to the conclusion, which harmonizes so well with practical experience, that "a process of repair"—a "mode of healing,"—is required for the cure of concussion, probably "analogous to the repair of apoplectic injuries, requiring therefore much time, and calling for great caution in the management of the invalid for a long period after the first symptoms."

The condition of the brain in concussion requires, no doubt, further investigation; but the existing evidence, so far as it goes, strongly tends to show the connexion between concussion of the brain and the morbid changes above mentioned; and if further researches establish that connexion more completely, the merit of having first elucidated one of the most obscure and debated points in surgical pathology, will certainly belong to Dr. Bright. It is scarcely necessary to remark how much more satisfactorily all the phenomena of concussion can be understood by tracing them to the physical alterations indicated by Dr. Bright, than by the vague expedient of referring them to "functional derangement." It will probably, also, be admitted, that M. Gama's experimental illustration of the mode of production of concussion of the brain, quite accords with the appearances that have been observed in fatal cases.—*Brit. and For. Medico-Chirurgical Review, Jan.* 1853, *p.* 66.

35.—ON ELECTIVE ELIMINATION BY THE SALIVARY AND OTHER SECRETIONS.

By M. Cl. Bernard.

In this paper Mr. Bernard calls attention to the fact, that some of the secretions rapidly eliminate certain substances, while other substances, equally soluble, are either eliminated much more slowly, or not at all. He relates the results of a series of experiments, in which iodide of potassium, iodide of iron, lactate of iron, cane and grape sugar, and yellow prussiate of potass, were injected into the veins, and the various secretions then tested for their presence.

Of these, *iodide of potassium* appeared, at latest, in from 30 to 40 seconds in the saliva, and was also rapidly observed in the tears and pancreatic juice. It required more than half an hour to become detectible in the urine or the bile; and, if injected in very small quantities, was not found in these at all. Introduced into the stomach, and especially fasting, it was found in the saliva in 1½ minute. The *yellow prussiate of potass* was not discernible in the saliva, while in seven minutes it was found in the urine and abundantly eliminated; the serum of the blood also exhibiting a notable quantity in an hour and a half. It was also found in the bile, while, although it was thus circulating in the blood, no traces of it could be found in the pancreatic juice. *Grape and cane sugar* never passed into the saliva or pancreatic fluid, while it was manifested in the bile and urine, though less

rapidly than the prussiate. As various authors state they have detected sugar in the saliva in *diabetes*, the author examined that of several such patients under M. Rayer's care. In none was sugar detected, although the bronchial mucus and sputa evidently contained it. *The mammary gland*, which in the normal state contains the sugar of milk in its secretion, refused passage to grape or cane sugar, even when these substances existed in large quantities in the blood. A saturated solution of *lactate of iron*, thrown into the veins, never gives rise to iron in the saliva; but when the iron is injected as an *iodide*, it obtains admission into the saliva, both the iron and the iodine being then detectible.

This expulsion of certain salts by this or that secretion, is not the only peculiarity the history of elimination presents. Some substances are eliminated rapidly and completely, while others remain within the tissues for a more or less long period. It is well known that certain of these, as mercury, antimony, and arsenic, become localized in certain organs—*e. g.*, the liver—and are then gradually eliminated: but it has not been noted that others, as the iodide of potassium, which are perfectly soluble, and remain soluble in the economy, wherein they circulate without enduring any accident, may remain for a certain time in the substance of the organs. Two or three weeks after iodide of potassium had been introduced into the stomach of several dogs, and long after its supposed entire elimination by the urine, in which it had ceased to appear, it was found in the saliva and gastric juice. If, however, purgatives were employed after administering the iodine, it ceased to be detectible in a few days in any of the secretions.—*Archives Générales*, N. S., vol. 1, p. 5.—*British and Foreign Medico-Chirurgical Review, April*, 1853, *p.* 558.

136.—*On the Administration of Phosphorus.* By Dr. R. M. Glover.—It has long been a desideratum in medicine to find some safe mode of administering phosphorus. At first I supposed that this would be attained in the new amorphous phosphorus; but, from experiments on animals, I find this substance to be without either the deleterious or the active physiological properties of the ordinary substance. I have given phosphorus lately in the following ways: first, in the form of a solution in chloroform; secondly, in cod-liver oil. Chloroform dissolves about one-fourth of its weight of phosphorus; and the solution is not inflammable. I have given four or five minims of this solution, shaken up with a drachm of ether, in a wineglassful of port wine, twice a-day, with great benefit in rallying the forces of the patient, as I fancied at least, in cases of typhoid fever. The solution in the oil is made by cutting the phosphorus into chips, and putting it into a bottle of the oil, in the proportion of half a grain to the ounce, then immersing the bottle in hot water, and, with a little shaking, solution is easily effected. I think I have seen this beneficial in strumous cases.—*Lancet, Jan.* 8, 1853, *p.* 34.

137.—*Hyposulphite of Soda and Silver.* By M. Delioux.—M. Delioux (Bull. de Thérap., xliii. pp. 289, 401) states, that two years' trial of this substance at the Marine Hospital at Rochefort, leads him to the conclusion, that in some cases it may advantageously be substituted for the nitrate, as a much milder preparation. It is formed by pouring a solution of hyposulphite of soda over oxide of silver, recently precipitated by potass, until the oxide is entirely dissolved. Evaporation furnishes minute crystals of the hyposulphite of soda and silver, which are dried in a mild heat, sheltered from light. It is insoluble in alcohol, and very soluble in water, the solution being more slowly decomposed by light than that of the nitrate. Kept away from the light, its transparency may be indefinitely preserved. When quite pure, it does not discolour the epidermis or linen. It is less astringent and irritating than the nitrate, and may in several cases thus be advantageously substituted for it. It is especially in urethral discharges it has been found useful, solutions of one or two parts to thirty of water exciting less irritation than solutions of the nitrate of half the strength. He, however, usually employs it only in the

proportion of half to one part to the 100 of water. He has not used it internally. —*Brit. and For. Medico-Chirurgical Review, April*, 1853, *p.* 567.

138.—ON MEDICAL METEOROLOGY.

By Dr. T. Moffat.

For some years I have kept a register of daily observations of the barometer and other meteorological instruments, the amount of atmospheric ozone, and the dates of the commencement of diseases as they occurred; and from what I have observed, I readily concur with the opinion of Dr. Addison, as stated in his article on "Requirements in Meteorological Tables," that the changes of the weather are prejudicial to health, and that mean readings of meteorological instruments do not show the connexion between the prevalence of diseases and atmospheric conditions. I feel confident that meteorological tables cannot be of any value, in a medical sense, unless they are formed of daily observations, and include the date of commencement of individual diseases; for even a slight increase or decrease in the readings of the barometer, with a change in the direction of the wind, leads to an increase in the number of cases, or to their entire removal. I have observed that the following diseases, viz., apoplexy, epilepsy, infantile convulsions, and sudden deaths, premature labour, menorrhagia, uterine pains, diarrhœa with sickness, and with or without cramps, toothache, neuralgia, &c.,—seldom occur without decrease of readings of the barometer and changes of weather; that snow and hail-showers are, all but invariably, accompanied by seizures of apoplexy, epilepsy, and sudden deaths; and that ozone never appears without a decrease in the readings of the barometer, and that its presence or absence in the air depends entirely on the direction of the wind.

Of the number of cases of apoplexy which occurred in the years 1850 and 1851, fifty per cent. took place on days of decreasing readings of the barometer, and fifty per cent. happened on days after such readings; one hundred per cent. occurred with fall of temperature, and they all took place with a direction of wind from the S.E. and S.W. points of the compass. Of the cases of epilepsy, in the same years, sixty-nine per cent. occurred with decreasing readings of the barometer, and ninety-eight per cent. took place with descending readings of the thermometer. Of the cases of toothache, ninety per cent. commenced with fall of the barometer, and seventy per cent. with fall of temperature. Eighteen out of twenty-three cases of premature labour occured with decreasing readings of the barometer, and either a reappearance or an increase in quantity of ozone. Of seven sudden deaths, five occurred with wind from N.W. with hail-showers. All the diseases above enumerated observe a similar rate of per centage to similar readings of the barometer and thermometer. Directions of the wind appear to influence the prevalence of certain diseases; for all the cases of rheumatism which came under my notice, in the same years, commenced with directions of the wind from southern, north-western, and intermediate points; as also did all the cases of bronchitis and pleurisy. All the cases of infantile convulsions commenced with the wind in the W. and N. W. points. All the cases of erysipelas took place with a wind from N. and S. and intermediate points, by way of W.; while toothache and neuralgia occurred with the wind from all points of the compass; but these two last diseases, diarrhœa, and some others, are *invariably followed by a decrease in the readings of the barometer, and a change in the direction of the wind.*

The following may be viewed as a type of a meteorological process, and of the class of diseases which accompany it:—If the wind continue from the northern points of the compass, that is, from points between N. W. and S. E., by way of E., the barometer readings will remain high, there will be few or no cases of disease, and no ozone; but if the wind passes into southern points, that is, to points from N. W. to S. E., by way of W., the readings of the barometer will decrease, there will be toothache, neuralgia, and diarrhœa, &c.; there will be ozone, and general changes in the weather; and when any of these diseases occur, *when the wind is in the northern points*, they are a certain indication that decreasing readings of the barometer will follow in a few hours, and ozone will be detected, or not, just as the northern or southern current prevails.

These conclusions are the result of close and uninterrupted observations during four years.—*Association Med. Journal, Feb.* 11, 1853, *p.* 129.

139.—*Recent Uses of the Ammonio-sulphate of Copper.*—At the Westminster Hospital, Dr. Hamilton Roe has recently employed this salt very successfully in the treatment of a series of cases of severe *chorea*, the patients being mostly children under fourteen years of age. In several the sulphate of zinc and sesqui-chloride of iron had been tried previously, and without benefit. The dose given has been from half a grain to a grain three times daily. Its use in this complaint is not novel, although not much resorted to in this country. In Italy it has gained a considerable reputation, and is known by the name of the "Specific of Stissero." Mr. Startin has for some time been accustomed to prescribe a long-continued course of the ammoniated copper in malignant diseases, and seemingly with some good results. Its action is probably that of a tonic. In several cases the health of the patient has appeared to improve very perceptibly. *Scirrhus* of the breast and *cancroid ulcers* of the skin are the forms in which it has principally been tried. The dose has ranged from the eighth to a quarter of a grain three times daily, and has often been continued for many months. We believe it has been employed for nearly similar purposes in veterinary medicine.—*Med. Times and Gazette, Jan.* 1, 1853, *p.* 23.

140.—POISONING BY LAUDANUM IN AN INFANT; EFFECTS OF GALVANISM.

By George Kirk, Esq., Middlesex-on-Tees.

[On the evening of the 24th of December, Mr. Kirk was summoned to an infant, one month old, labouring under all the symptoms of narcotic poisoning. The husband confessed to have given it six or seven drops of laudanum. Mr. Kirk says:—]

I immediately got some tartrate of antimony wine, but found there was a total inability to swallow, and that no attempts could be produced by irritating the tongue and fauces; coma appeared rapidly increasing. By this time the breathing was only occasional and apparently with great difficulty, face deadly pale, and pulsation of heart very indistinct; I expected that in a very short time death would close the scene. Recollecting that I had some time since seen reported in "The Lancet," that galvanism had been successfully applied in a case of poisoning from an over-dose of opium, I at once decided upon giving it a trial in this case; and having got the battery into action as soon as possible, I applied one of the conductors over the epigastrium, and taking the other conductor in my right hand, I passed one of the fingers of my left hand into the mouth of the child between the teeth and gums, and as far back towards the fauces as I conveniently could—the battery acting with the lowest intensity I could produce (having nearly withdrawn the bundle of wire from the centre of the coil). I found the breathing almost immediately become regular; the action of the heart also increased, and was natural so long as I kept up contact. After continuing the action continuously for nearly half an hour, I suspended the action of the battery by withdrawing my finger from the mouth, when the breathing gradually decreased, and it was apparently subsiding into the same state as previous to the commencement of the galvanic action. Observing this, I again introduced my finger as before, when the respiration again became natural; and after continuing it about an hour longer, I was enabled to make the child swallow some tartrate of antimony wine. The action of the battery being again withdrawn, the respiration went on natural for a greater length of time, but again began gradually to sink into its former state; again renewing the communication of the battery as before, in a little time the child vomited. Stimulated by the success, I continued the galvanic action, occasionally withdrawing the stimulus for short periods. I continued for upwards of four hours, as after each successive application the child appeared to improve. Finally, the breathing and circulation seemed completely established; and the child being able to swallow a

little coffee, I ordered a tea-spoonful of castor-oil to be given every three hours until such times as the bowels were acted upon freely. The child continued ailing for a day or two, but has ultimately recovered, and is doing well.—*Lancet, Jan.* 22, 1853, *p.* 80.

141.—THERAPEUTIC USES OF THE BARK, LEAVES, SEEDS, AND ROOT OF THE COMMON ASH.

[In a work published by Dr Otterbourg last year, the leaves of the common ash are highly spoken of as a remedy in *gout and rheumatism*. In the same year two French physicians, Drs. Pouget and Peyraud, published a paper confirming the same observation. The case of Dr. Peyraud himself will illustrate the effects and mode of administration of the plant better perhaps than that of any other detailed.]

In 1842, Dr. Peyraud had his first attack of gout, which was severe, and lasted for twenty-five days. During the three following years, the attacks increased in frequency and severity. Having derived little benefit from the remedial means which he had resorted to, he listened to the suggestions of one of his patients, an inhabitant of the department of Dordogne in France, who advised him to try an infusion of ash leaves; informing him, at the same time, that his forefathers had been cured by this prescription, and that many of the country people got rid of "their pains" by employing it. Dr. Peyraud took the infusion of ash leaves, and from 1845 to 1849 had no fit of gout. He then had an attack, which yielded in five days to the infusion of ash leaves, used under the observation of Dr. Pouget. These circumstances recalled to the recollection of Dr. Pouget a fact which he might otherwise never again have considered. It was this,—that when he was a physician at Sorèze, in 1824, the peasants of that place had spoken to him of the great power which an infusion of ash leaves had in driving away pains. He afterwards discovered that it had been used forty years ago as a gout specific by the peasants of Auvergne.

A commercial traveller, who had been gouty for twenty years, and had saturated himself with the syrup of Boubée and other vaunted specifics, consulted Dr. Pouget. At this time he was an almost constant prisoner in his room with successive attacks. After eleven days' use of the infusion, he was able to walk two *kilomètres* (one and a quarter English mile); in fifteen days he resumed his journeys, and was able to travel without suffering, by diligence, from Bourdeaux to Quimper.

Several other cases are detailed, some of them acute, and others chronic. Articular rheumatism, in numerous instances, was also benefited by the infusion of ash leaves.

Drs. Pouget and Peyraud thus sum up their opinions as to its efficacy and mode of administration:

"The powder (infused) of ash leaves is perhaps a true specific for gout and rheumatism, combining with the most powerful curative action, the immense advantage of giving rise to no dangers nor inconveniences, such as result from the use of colchicum. Having no purgative properties, it may be taken in any condition of the digestive canal. It causes neither nausea, sickness, general discomfort, nor depression. Experience enables us to state, that generally, under its use, at the end of four or five days, and sometimes sooner, the pain, redness, and swelling have sensibly diminished in intensity, or have even disappeared."

The method of administration is thus minutely described.

1. Each dose of the powdered leaves ought to be infused for three hours in boiling water.

2. Before this infusion is taken, it requires to be sweetened to taste, and strained through a linen cloth.

3. In acute gout, and especially at the commencement of the attack (whether with or without fever), two doses of the powder ought to be infused in three cups of water; one to be taken at bed-time; the second, early in the morning; and the third, between breakfast and dinner. The medicine in diminished doses, requires to be continued for eight days after the symptoms have disappeared.

4. In chronic gout, a cup of infusion ought to be taken night and morning for a

long period. Fits of gout may be more or less indefinitely postponed by having recourse to this treatment, say for 8 or 10 days in every month.

5. In acute rheumatism, the infusion greatly assists the action of other medicines which are commonly used; and it is particularly beneficial in removing articular swellings. It produces equally good results in chronic rheumatism, whether articular, muscular, or nervous.

6. During the use of the remedy, it is not necessary in any way to change the mode of living, nor to adopt any special regimen, so long as the laws of sound hygienics are observed.

Speaking of the dose and method of administration, Dr. Otterbourg says: "Several times during the day, thirty-two grammes of ash leaves may be taken, infused in a sufficient quantity of hot water. In muscular pains, and in rheumatism of the scalp, this is an excellent means of cure."—*Association Med. Journal, Jan.* 7, 1853, *p.* 17.

142.—GUACO, AN ANTIDOTE TO SERPENT BITES; ITS USE IN RHEUMATISM, SCIATICA, DEAFNESS, &c.

By Dr. E. W. Pritchard, (late R. N.) Hunmanby, Scarborough.

[In a letter to the editor of the "Medical Times and Gazette," Dr. Pritchard bears his testimony to the efficacy of a plant named Guaco, a species of Aristolochia, much used by the natives of Central Africa, as a remedy for these wounds. He says],

Dr. Duvon exhibits it in the form of tincture thus:—

℞. Guaco powdered, ℥ ij.; spirit. ten. Oj. Mix, digest for eight days in gentle heat, and filter. Dose, 3j. to 3iij.

The part bitten is to be well rubbed with the tincture, or the stem of the plant, as may be at hand. During my sojourn in South America, hearing of its reputed effects, I prepared a tincture as directed, and soon after had an excellent opportunity of testing its virtues in the case of a seaman wounded by a scorpion, when alarming symptoms manifested themselves. The injured limb was instantly rubbed with the application, and 3j. doses given every ten minutes, and with marked benefit, the patient expressing himself relieved after each dose, and he eventually recovered. I am not aware of this medicine being much used in this country, but since being in private practice, I have used it in chronic rheumatism and sciatica, in ecchymosis and sprains, also in some forms of deafness, with unerring success.—*Med. Times and Gazette, Nov.* 20, 1852, *p.* 522.

[In a subsequent letter, Dr. Pritchard, in answer to an inquiry, says, that the true guaco plant is named the "Mikania Guaco," classed by Dr. Lindley under the "Aristolochiaceæ." He adds,]

I can bear indisputable evidence of its utility as a tonic. When on board Her Majesty's frigate, Calypso, returning from the Gulf of California and coast of Mexico, many of the crew were attacked with bilious remittent fever, and during the stage of convalescence, when languor is almost a second disease, the exhibition of the guaco was found most magical in its effects. Having fallen a victim myself, I freely confess, when I began to take it, my appetite and sleep soon returned, while quinine gave headache, and increased the thirst and restlessness.

Subsequently it was administered in cases of chronic dysentery with speedy benefit. Dr. Dwoon, of "Quayaquella," found it a useful "sialogogue" in syphilitic affections of the gums, as a dentifrice in spongy gums, in chronic rheumatism, and sciatica pains; in cases where atonic action of the tonsils exists; he used it in all cases of doubtful wounds; bites of insects, applied externally: also in ecchymosis and sprains; and extols its virtues as invaluable.

The success which has attended its use in the cure of atonic deafness, especially that which appears in the post-meridian of life, will be best seen by presenting you with a few cases from my note book.

Mrs. V., aged 56, consulted me in the month of June, 1851, complaining of being dull of hearing for the last ten years, which she attributes to the period of change. The cerumen was properly secreted, and the organ appeared perfect. It was only

by shouting close to the head she could be made to understand; any very sudden noise or report produced a whizzing sensation, which completely confused all her ideas.

Previously to seeking my advice, she had been under some very eminent aurist, without receiving relief: stated that syringing always made her quite incognizant of sound. Her general health seemed good, with the exception of suffering occasionally from severe constipation. Catheterism of the Eustachian tube had been tried, and vapours passed through that channel to the ear, but with the same result as injecting into the external meatus.

Five drops of the tinct. guaco were dropped into the right ear, and secured by a small plug of gutta percha, the latter having a coating of collodion painted over it.

A pill of rhubarb and aloes was ordered every day after dinner; and three drachms of tinct. guaco, in six ounces of distilled water, for a mixture. Two tablespoonfuls three times a day.

Four days afterwards the plug was removed, and cotton wool, dipped in the guaco, substituted; the left ear was then plugged. In the following week, the clock striking in her parlour alarmed her, and I was sent for. The drops were now used every night for three weeks, and every day fresh proofs of returning function. At the expiration of two months hearing was perfect, and I am happy to say has remained so to the present date.

W. R., Esq., of Scarborough, had suffered for a long time with lumbago, caught by hunting. He had received the advice of many medical men, and had undergone a variety of treatment, which had at times given him temporary relief, but every fresh exposure to exercise on horseback produced the malady. He consulted me in July, 1851. I ordered the loins to be well rubbed with the tinct. guaco night and morning, and a belt of red flannel to be worn, instead of the one of chamois leather. He then had a mixture, viz.:—

℞. Tinc. guaco 3iij., aquæ destillatæ ℥vj. M. capiant cochlearia magna ij. ter die, with occasionally a mild aperient pill, generally pil. rhei co., gr. v.

In three weeks he was perfectly free from the complaint, and can hunt or exercise himself in any way; and, up to the present time, has had no return.—*Med. Times and Gazette, Dec.* 25, 1852, *p.* 651.

143.—*Antidotes to Serpent-Bites.*—[A correspondent in "The Lancet," who states his having been in India several years, confirms the testimony as to the value of *ammonia*, or *eau de luce*, in the bites of these snakes. He says:]

I had a servant bitten on the finger by a large cobra de capello, six feet long, and decided symptoms of poison appeared before any medicine was administered. I gave a teaspoonful or drachm, of eau de luce in a wine-glass of water, applied a tourniquet above the elbow, washed the bitten part, which was much lacerated, and applied lunar caustic, and kept the patient moving (walking), supported by two men. The medicine was repeated every ten minutes or quarter of an hour, according to the urgency of the symptoms, and four or five doses were given, when the symptoms diminished, and the patient gradually recovered, but afterwards complained of soreness in the throat from the effect of the medicine.

A medical officer at Gorruckpore, Dr. Butler, informed me he was equally successful in his treatment, which consisted in full doses of laudanum, hot brandy-and-water, and peppermint.

We are totally ignorant of the nature of the poison of the cobra, but it acts in a very short space of time, and, unless strong stimulants be given, soon destroys the vital power. The blood becomes remarkably fluid, and oozes out from any scratch or puncture.

When at Mhow, in Malwa, in Central India, a groom in our regiment was bitten by a poisonous green snake, common in that part of the country. The poison of this snake, which is described in Russell's book, will kill birds or small animals, but is not sufficiently powerful to destroy the human subject.

The man was bitten near the wrist, and the arm swelled up to an immense size, and he felt uneasiness, but no pain. I washed the part, and applied three or four leeches over the bites, and the blood continued to ooze from them for two or three

days, and also from two places on the back of the hand, which had been accidentally scratched before he was bitten.

In that part of the country there is a very beautiful and venomous snake, of a bright yellow colour, with black stripes. It is drawn and described in Russell's book on Snakes, under the name of *Ketula retula poda*. This snake is considered more venomous than the cobra, and has very much larger fangs. I have some in my possession from this snake, which was little more than three feet long, but which are about twice the size of those from a cobra six feet long.

When at this station, Mhow, some snake-charmers were exhibiting these and other snakes, and I observed they had a small pot of live charcoal, in which were two or three small iron instruments, made like a tenaculum, of the exact size and curve of the large poisonous fang. They informed me, they always had these ready heated, in case of accidents; that, if bitten, they were immediately applied to the punctured part, and that no ill consequence ever followed. This plan of applying the *actual cautery*, appeared to me so very reasonable and scientific, that I had an instrument made after the same pattern.

The "snake-stone," supposed to be a remedy by some natives, is a smooth stone, about the size of half-a-crown; it is moistened, and applied over the bitten part. By preventing atmospheric pressure, it no doubt retards or prevents absorption of the poison, and the same, or better effect, would result from the application of cupping glasses, but, generally speaking, they could not be applied to the bitten part, which is usually on the hand or foot.

Suction will remove the poison. I knew the life of a person saved by an acquaintance of mine; he was bitten in the leg by a cobra, the wound was immediately sucked, and no ill consequence ensued.—*Lancet, Dec.* 25, 1853, *p.* 594.

144.—EXCISION OF THE KNEE-JOINT.—FATAL TERMINATION OF THE CASE.

Under Prof. Fergusson, F.R.S.

[The following is the subsequent history of the case reported at page 112. Matters went on favourably for twelve days after the operation, except a little vomiting and shivering, which, however, resisted means used to control them, perhaps from their dependence upon pyæmia.]

The patient became gradually weaker, and died on the sixteenth day after the operation. As this is a case of much importance, which is likely to have a vast deal of influence on the confidence which should be placed in the operation of excision of the knee-joint, we shall deviate a little from our custom, and instead of condensing the description of phenomena, as we are wont to do, we beg permission to enter fully into the details of the case, aided by the notes of Mr. Price, the dresser of the patient.

Day of the excision of the knee-joint.—The patient had thirty minims of laudanum after she had been placed in bed.

First day after the operation. The patient slept about an hour in the night, and vomited several times; she has had a good deal of pain and starting in the limb; tongue moist; pulse at nine o'clock a.m., 126; at nine p.m., 160.

2d day. Slept better last night; the leg is free from pain, but the patient complains of headache; the bowels are confined, the tongue rather foul, and the skin dry; pulse 140; and at nine p.m., 148. Mr. Fergusson ordered effervescing draughts, with acetate of morphia, to be taken every fourth hour.

3rd day. The patient slept only two hours on the previous night, being disturbed by a dying patient lying in the same ward; she still complains of headache; feels no pain in the limb, and takes her beef-tea and brandy well; the eggs make her sick; pulse 129.—Three p.m.: The dressings were changed this day for the first time; the wound looks well; slight suppuration has set in; the limb lies in a good position; it gave her no pain to have it dressed; the bowels not having been open since the operation, half an ounce of castor oil was prescribed.

4th day. The castor oil operated twice, and made her sick in the night; she had but very little sleep, but felt pretty comfortable in the morning, and was free

from pain in the leg. The patient is thirsty, the tongue dry and brown, and the pulse at 130. Lemonade was ordered, and she was desired to name anything she fancied.

5th day. The night was better, and the patient is more cheerful; pulse 110. The splint was changed, and there is a plentiful discharge of healthy pus from the wound; the transverse incision has united by the first intention; there is no pain in the limb.

6th day. The night was better; the tongue cleaner; the patient is not so thirsty; the limb is quite free from pain, and the discharge plentiful and healthy; pulse 120. In the evening of the same day the girl fainted while the dressings were being changed; she soon recovered, but fainted again twice in the course of an hour.

7th day. Very little sleep last night; pulse 130; the tongue is foul, but there is no pain in the leg. The patient looks pale and distressed: she refuses her food, and coughs a good deal. There is a slight abrasion over the sacrum from lying in one position, which abrasion annoys her a good deal. She was ordered a cough mixture.

8th day. The girl is more cheerful to-day, and has had a better night. Some amadon plaster and a pad of cotton-wool were applied to the back with great relief; pulse 125; appetite rather improved; beef-tea, brandy, oysters, fowl, &c., &c.

On the 9th, 10th, and 11th days, the principal symptoms were severe cough and diarrhœa, which were combated by appropriate remedies.

On the 12th day the patient was very low and faint, and complained much of her back, which had become more inflamed.

On the 13th, 14th, and 15th days, the patient became weaker, though every possible means were used to keep up her strength. Dr. Todd saw her with Mr. Fergusson on the fifteenth day, and advised an enema of beef-tea to be given, which was returned about seven o'clock in the evening.

She continued to vomit very frequently; this symptom was relieved by means of creasote and morphia, but the grumous vomiting returned again about seven o'clock, gradually lowering the strength of the patient. She died on the sixteenth day.

No post-mortem examination was allowed by her friends, but Mr. Fergusson, about forty-eight hours after death, examined the joint, and found it in a flabby condition, such as is usually met with when death occurs at such a date after an operation: the granulations were soft, and there was no indication of action leading to the formation of bone, nor any attempt of the edges of the wound to granulate. The surfaces of the ends of the bones were looking very unhealthy, the periosteum separating readily from them, as was observed during the operation. No swelling about the region of the thigh or groin, or any enlargement of the other joints were observed; nor could any sign of effusion into the chest be detected. The body was much emaciated.

It is a pity that the inspection was restricted to the joint, but it may perhaps be inferred from the symptoms that pyæmia was the cause of death. Whatever the cause of the fatal issue may be, it is plain that the result is not such as to encourage attempts in the same direction—the more so as patients who have long suffered from disease of the knee-joint are so debilitated by suffering that they do not seem to be favourable subjects for an operation which appears to make greater call upon the system than amputation.—*Lancet, May 7, p. 425.*

145.—ON THE USE OF A VERTEBRAL HOOK IN SOME CASES OF DIFFICULT DELIVERY.

By Dr. Henry Oldham, Obstetric Physician to Guy's Hospital.

[This instrument is intended to pass some distance into the vertebral canal, and secure a ready and firm hold upon the arches of the vertebræ. In this way it forms a powerful tractor and effective instrument for delivery.]

This vertebral hook is of simple construction; its length is fourteen inches, of

which four inches are taken up in the handle, which is roughened on the surface, and sufficiently large to afford a good grasp. A straight steel stem well fixed into the handle, and gradually tapering to the extremity, is bent at an acute angle, the free point being fined off at the edge to facilitate its being fixed. The bent part forming the hook is half an inch long, and projects at such an angle that it easily traverses the upper part of the vertebral canal in a mature or even a seven months' fœtus, and, if well made, it is quite strong enough to bear, without yielding, any degree of traction by the hand. When using it, all that is necessary is to seek for the foramen magnum, and to push the hook within it. The cord breaks down before it, and when within the canal it only requires a slight rotatory movement to be made to find it fixed firmly on the arches. The best way to demonstrate the use of this instrument is to run it into the vertebral canal of a fœtus already delivered by craniotomy, when the ease with which it becomes fixed, and the difficulty of removing it when once it is fixed, will at once be seen. The upper part of the vertebral column forms an excellent point for traction, as the force is well kept on that part of the skull, which, next to the presenting parietal bone, it is best to keep the lowest. The hold too is so firm, that there is not the same necessity as with the crotchet for counter-support with the other hand and finger, and consequently there is less need of vaginal manipulation.

The vertebral hook does not supersede the crotchet or craniotomy forceps, as in a majority of cases these instruments, and especially the former, accomplish delivery as safely and expeditiously as circumstances permit. But in some cases of unusual difficulty it comes greatly to our assistance. I have found this to be the case where there has been considerable pelvic deformity, associated, it may be, with rigidity of the soft parts in a first labour; and, if labour has gone on for long, with inflammatory congestion and great tenderness of the vagina, or œdema of the labia and perineum. The prolonged efforts with the crotchet which some of these cases require, gradually break away the bones to which it has been applied, and still the head, if the deformity is in the conjugate diameter, may remain above the brim. Further attempts with the crotchet involve a good deal of handling, and occasion considerable pain, although its full power and efficiency is not tried until it has been applied outside the head, or on the edge of the orbit, where a good purchase may be obtained. In these exhausting cases, both to the patient and practitioner, a vertebral hook is a valuable resource.

This hook is of essential service, too, in cases where the trunk of the fœtus has been removed, and the head left behind, whether it be designedly, after severing the one from the other, in an arm presentation, or when, in attempting to extract a fœtus by the feet, in a deformed pelvis, the neck has given way in the efforts to bring the head through the brim. I have had to deliver the separated head under both these circumstances.

In April, 1851, I was requested by Mr. Remington, of Brixton, to see a patient with a deformed pelvis, who had twice been delivered by the crotchet, and on one occasion premature labour had been induced, and a live child born. She had again advanced to seven months and a half, when Mr. Remington ruptured the membranes, and five days afterwards labour set in, and an arm protruded. Mr. Remington and two of his medical neighbours had tried to turn, but failed. A full dose of opium had been given. When I saw her the left arm was beyond the vagina, livid, the skin peeling off, and the uterus contracting energetically. To turn seemed impossible. On making traction with the protruding arm, with the view of getting the thorax within reach of the perforator, it gave way. Having a decollator with me, I passed it over the neck and divided it, and at once removed the trunk. I then, without difficulty, ran the vertebral hook within the spinal canal, and with the hold so obtained, drew the head through the narrow brim. In the same way I was enabled to deliver in a case where, after long-continued traction, the head of a mature fœtus remained fixed in a contracted brim, the breech having presented and the body of the fœtus withdrawn. When I saw this case the vertebræ had given way, and the neck was held only by soft parts. Whilst endeavouring to fix the head so as to perforate the occiput, the neck separated, leaving the head behind. The uterus was supported in a contracted state upon the head. By pressure over the lower part of the abdomen, and with a little management, I ran the vertebral hook within the canal, and so fixed the

head that I was enabled to pass a perforator into the occiput, and then delivered with the hook. The great difficulty of removing a separated head is a practical objection to the use of the decollator in arm presentations, when turning is impracticable; but, so far as my experience goes, I think a vertebral hook will so far assist in the delivery of the head as to allow this operation an occasional preference over the perforation of the thorax, and the delivery by the breech.

This month (May 5, 1853,) Mr. Shaw requested me to see a patient of his, whom he was attending in her second labour, the breech having presented. The trunk of the child and the arms were born, and he endeavoured unavailingly to remove the head. I found that the efforts which he had made had separated the cervical vertebræ, and the integuments alone maintained a loose connexion between the head and trunk. The brim of the pelvis was much contracted, measuring about two inches and a quarter in the conjugate diameter, and the bony edge of the brim and pubic arch was very sharp. I endeavoured to fix the head sufficiently firm at the brim, by traction upon the neck, to allow the perforator to pierce the occiput; but before this could be done, the integuments gave way, leaving the head loose and moveable about the brim. I then felt for the opening into the vertebral canal, and endeavoured to push the vertebral hook through it. For a few minutes I was foiled in accomplishing this, on account of the broken state of the vertebræ, which had been torn through, but having passed by the fragments and entered the canal, it ran up at once and caught a firm hold, with which I was enabled so to fix the head as to perforate the occiput and break up the brain, an operation, with so contracted a pelvis, of considerable difficulty. I then drew down with the vertebral hook, and was making good way, when the vertebræ yielded; and I found that the hook, which had been fixed upon the atlas, had separated this bone from the base of the skull. With the crotchet I was now able to enter the skull through the perforated opening, and to obtain a firm purchase, but the bone soon broke under the forcible traction, and having torn away a great part of the base of the skull, and the petrous portion of one of the temporal bones, I was at last enabled, after an hour and a quarter's severe work, to draw the head through the narrow brim, the crotchet being fixed over the orbit inside the skull.

In this case the vertebral hook was of the greatest value, and Mr. Shaw and I were satisfied with the easy application of it, and the firm purchase it afforded. The vertebral bones gave way under the powerful efforts I was obliged to make with it; but having by its means opened the head, I was able to use the crotchet advantageously. The extreme difficulty of removing a head slipping round in the uterus, which rather closes over than contracts upon it, and above so narrow a brim, cannot well be overstated. To perforate under such circumstances, with the hand and the instrument buried so deeply, and the head receding on being touched, which no external pressure can prevent, is most difficult; and Mr. Shaw and I felt that the vertebral hook came most opportunely to our assistance, and enabled us to get through a very forbidding case satisfactorily.—*Lancet, May* 14, 1853, *p.* 447.

146.—*Fomentations of Digitalis in certain kinds of Ascites.*—Dr. Raymond Falot has published in the "Revue Thérapeutique du Midi" three cases of inflammatory ascites in which diuretics were not well borne by the stomach, and where fomentations with a decoction of digitalis-leaves produced marked action of the kidneys, and absorption of the fluid effused in the peritoneum.

The first case is that of a girl twenty-four years of age, who, after severe wetting, was attacked with subacute peritonitis and consequent ascites. Nitre and powdered digitalis had very little effect, and tapping to twelve quarts took place. As the liquid re-accumulated, fomentations were made with a decoction of two ounces of digitalis to a quart of water boiled down to a pint. The liquid was applied by means of compresses soaked in it, and covered with oiled skin to prevent evaporation. The kidneys acted very powerfully, and the effused fluid became completely absorbed. The same means also succeeded two years afterwards when the patient suffered again from ascites.

The second case refers to a boy eight years of age, who had ascites after inter-

mittent fever. Both the syrup and powder of digitalis were ill borne: the fomentations were used as above described, and the effusion disappeared, whilst the kidneys and skin were acting powerfully.

Third case.—A man fifty years of age suffered from ascites after a very severe attack of gastric fever. No sort of medicine could be borne; the digitalis fomentations were resorted to, and the same favourable results as in the previous cases were obtained in a few months. Dr. Falot states that he does not wish to give his mode of treatment more importance than it deserves, but that he was much struck with the coincidence between the use of the fomentations and the increase of the renal and the cutaneous secretions. In one of the cases frictions with the tincture of digitalis had been used without success. The fomentations will certainly be worth a trial when the usual diuretics cannot be given by the mouth. The leaves should not be more than one year old.—*Lancet, May 7, 1853, p. 428.*

147.—LARGE HÆMATOCELE OF THE THYROID GLAND, CAUSING URGENT DYSPNŒA BY PRESSURE UPON THE WINDPIPE—TREATMENT BY FREE INCISION—CURE.

By E. R. Bickersteth, Esq., Liverpool.

[Mr. Bickersteth was consulted on the 27th September last, by Mrs. M., regarding a tumour resembling a large bronchocele, extending from the top of the sternum to the top of the larynx. It was smooth and fluctuating, and the integuments very thin over the most prominent portion. It had existed three years; but latterly the breathing had become much oppressed. The fluid, of a thin dark appearance, was drawn off by a trocar and canula, to the great relief of the patient. On the 4th of October, however, she returned, with the symptoms more aggravated, and the tumour larger; the fluctuation being quite as distinct as before. Mr. Bickersteth proceeds:]

From the consideration of the circumstance that the tumour was composed of a single cyst, and that its contents were entirely fluid, as apparently proved by the former tapping, admitting, consequently, of complete evacuation, I thought that injection with tincture of iodine, after the sac had been completely emptied, would afford a reasonable prospect of inducing its obliteration; and I was further encouraged to attempt this treatment by the recollection that, even if it should fail, no obstacle would be presented to the more severe measure of laying the cavity freely open.

Three drachms of the pure tincture of iodine were placed in a glass syringe, and I prepared to inject, having first emptied the cyst as far as possible. About four ounces of dark fluid blood, much thicker and more tarry than upon the last occasion, passed freely through the canula, and the swelling was removed as effectually as before. But now florid blood began to ooze very rapidly, and continued to do so in spite of the means used to check it. On this account the injection was discarded, for I feared the free hemorrhage would prevent the tincture from coming into contact with the walls of the cyst, and thus fail in producing the requisite degree of inflammation; moreover, I did not like the consequences of mixing tincture of iodine with fresh blood in the interior of a cyst occupying this situation. The canula was therefore withdrawn, and perhaps it was as well, for within five minutes the tumour was almost as large as ever. Still the relief to her immediate distress was considerable, and to her request a short delay was granted, before proceeding to more radical treatment.

October 8th.—She is now earnestly desirous that something should be done immediately to relieve her. The breathing is more laborious than ever. The inspiration prolonged, and performed with considerable effort. Each attempt is accompanied by a peculiar crowing sound. The tumour is very firm and tense; and the skin is ecchymosed over the whole of the neck and chest. The patient being seated upon a chair, with the head thrown back and supported by an assistant, I introduced a sharp-pointed bistoury into the most prominent part of the tumour, a little to the right of the mesial line, and having opened the cyst, I enlarged the wound downwards to the extent of about two inches, by means of a

curved probe-pointed bistoury. I now ascertained that the cyst was of much greater size than I had previously imagined. It passed downwards and backwards deeply into the root of the neck, behind the sternum and in front of the trachea, further than my finger would reach; and from this part I was able to turn out large clots of dark solid blood. Hitherto there had been very little hemorrhage; but, in order to treat the case effectually, it appeared necessary to make the external opening still larger, for as yet not more than one-third of the known extent of the cavity had been opened. But at the lower part its depth from the surface greatly increased, and a considerable portion of the substance of the thyroid was evidently placed before it, so that by cutting in this direction, the danger of wounding important vessels was great in proportion. Using my knife in the same manner, I again extended the incision to within half an inch of the top of the sternum, and thus laid open the cyst as freely as it was possible. Even then I could not find the bottom of the cavity. The hemorrhage from this last incision was very profuse; the blood spouted in every direction as from a sponge, and proceeded manifestly from the divided walls of the thyroid. After the loss of a few seconds spent in a vain endeavour to secure the vessels by ligature, the cavity was stuffed with lint till the cut surfaces were widely distended, and then, by drawing a few straps of adhesive plaster from side to side, a uniform and steady pressure was secured, which immediately and effectually checked all further bleeding.

The future progress of the case has in all respects been most satisfactory. Not a single unfavourable symptom occurred. On the third day discharge from the wound commenced, and part of the lint came away; and at each succeeding dressing a portion separated, until on the eighth day the whole had been discharged. Then the cavity began to contract, and the swelling and discharge to decrease. At the same time the margins of the wound approximated, and showed so great a tendency to unite, that it was necessary every second or third day to introduce my finger, in order to keep the opening patent until the obliteration of the cyst was complete, &c. To hasten the process, I directed a blister to be applied, and with most beneficial results. The discharge became thin, and of small amount. The edges of the incision puckered in, and have now (five weeks after the operation) all but closed, forming a deep furrow, with the divided lobes of the thyroid on either side. The breathing has continued perfectly free, and the voice also is slowly recovering its natural tone and force.

The perfect relief afforded by this treatment to the most urgent and distressing symptoms was most gratifying, and the simplicity of the operation, together with the absence of any unfavourable occurrence, is highly encouraging for future guidance.

The real, as compared with the apparent, size of the cyst,—its extension downwards so much further than was indicated by external examination,—its partially solid contents, when fluid alone was discovered with the trocar, and every reason existed for supposing that none other was present,—are facts not to be forgotten, and must always more or less influence our diagnosis, until an actual exploration with the finger has been effected. It may be remembered also with advantage how utterly useless in the wounded thyroid the ordinary method of securing the vessels by ligature proved, and how easily profuse arterial hemorrhage was stopped by continued pressure.—*Monthly Journal of Med. Science, Dec.* 1852, *p.* 540.

148.—IMPROVED METHOD OF CONTINUOUS IRRIGATION.

By John Hilton, Esq., F.R.S.

[Hitherto, in Guy's Hospital, irrigation has been performed by dipping one end of worsted threads in some convenient receptacle of water, and applying the other to the part to be irrigated. This, however, is somewhat uncertain, and Mr. Bigg, of St. Thomas's street, under the direction of Mr. Hilton, has supplied the deficiency by constructing the following apparatus:]

The instrument consists of a zinc reservoir, with a vulcanized india-rubber tube opening from it at its side, close to the bottom. The entrance of water into the tube is regulated by a stop-cock; at the other end of the tube is affixed a broad

zinc head, resembling a compressed or flattened rose of a watering-pot, a linear series of perforations being cut through its lower or convex edge. Equidistant from each other, and about half-an-inch apart, threads of worsted were passed through these holes from within, and made to project about three-quarters of an inch below the metal. This end was suspended over the part to be irrigated; the reservoir charged with water placed upon the usual little shelf situated at the head of the bed, and the stop-cock being turned, allowed the water to escape into the tube. The extent and rapidity of the irrigation were, by the aid of the stop-cock, perfectly regulated. A small sheet of oil-skin was placed under the arm and separated from the bed, the oil-skin being so arranged as to conduct the water which had passed over the limb into a basin or upon the floor of the ward. It is obvious that water of any temperature, or medicated in a prescribed manner, may be made, by this simple and cheap apparatus, to distribute itself over any part, however small or extensive it may be. The advantages of this instrument are, that the supply of water can be regulated by a stop-cock, so that there may be a definite and equable amount of irrigation to every part of the injured structure, or to any particular region, which irrigation can be regulated according to the sensation of the patient, or the temperature of the textures under treatment. By enlarging or diminishing, by elongating or shortening, the head, or varying its form, the drops might also be carried simultaneously over a larger or smaller, or any irregularly-formed surface.—*Lancet*, *Jan.* 29, 1853, *p.* 110.

149.—ON THE MODE OF FORMATION OF SECONDARY ABSCESSES, AND SOME OTHER CONSEQUENCES OF A VITIATED CONDITION OF THE BLOOD.

By Henry Lee, Esq.

[Mr. Lee, in a clinical lecture at King's College Hospital, lays great stress upon thoroughly understanding the pathology of these affections. This is proved from the unfortunate treatment which was for a long time followed. He says:]

The treatment of these complaints has apparently, until very recently, been dictated by the name which was at first accidentally applied to them. The affections were said to be inflammatory; antiphlogistic remedies were of course to be employed. The symptoms usually did not yield. This was doubtless on account of the violence of the inflammation. More active measures were had recourse to. The lancet was freely employed in England; the application of large numbers of leeches in France. To these were added the free use of calomel and opium, and other remedies calculated, in the language of the writers of the day, to combat and to "beat back" the inflammation; and in this object those who adopted the practice doubtless often succeed, at least as far as diminishing any external appearance of irritation was concerned. The accounts which they have left us usually terminate with a description of the benefit derived from the means used, and the disappearance of some of the symptoms of local irritation, but that, unfortunately, at last the powers of the constitution were found to give way! The victory over the disease was obtained only at the expense of the power of life; the inflammation was arrested, but, unfortunately, the patient died.

[He then proceeds to inquire as to the mode in which abscesses and deposits consequent upon a disease or injury, form in distant parts of the body.]

Until within a very recent period, it has been taken for granted that the lining membranes of the blood-vessels were analogous in their morbid actions to closed serous cavities. This doctrine was received without question, and it was supposed that the lining membrane of a vein would inflame, and would secrete lymph and pus as readily as the pleura and peritoneum. Upon this was based the further theory, that when secondary deposits occurred as a consequence of local phlebitis, the lining membrane of the vein first affected had secreted some purulent matter, which had been carried in the course of the circulation, and that the particles of pus, being larger than those of the blood, had been mechanically arrested in those situations where the secondary effects manifested themselves.

Now, this is a very clever and ingenious theory, and has received the sanction of

some of the greatest names in Europe. But I would ask you to investigate with me the actual facts which can be demonstrated or disproved upon which this theory has been established; and, first, with regard to the power of the lining membrane of the veins first implicated to secrete lymph and pus, is the action of this membrane indeed analogous to that of serous membranes generally?

Now, it is true that the lining membrane of veins is very similar in its lubricated and shining appearance to the free surface of the serous cavities. It is also true, that in the interior of the veins a white adhesive matter is often found, in its characters resembling the lymph which is secreted from inflamed vessels, and it is also equally true that a white fluid, resembling pus in its general characters, is often found in their interior. But are these the products of inflammation of the lining membrane? Does the lining membrane of veins become injected with blood-vessels in a similar way to that of serous cavities, and do its vessels pour out in a similar way lymph and pus?

Now, to these questions all the *post-mortem* dissections which have been hitherto accurately made, answer, I believe, in the negative. The similarity between the lining membrane of veins and the serous lining of closed internal cavities here fails; the former are not capable, like the latter, of being similarly injected in a state of inflammation, nor are they capable in the same way of secreting lymph and pus. The lining membrane of the veins already in contact with the blood does not require blood-vessels for its nutrition, and consequently is not supplied with them; and in its processes of repair and so-called inflammation, having the materials for carrying out the requisite processes always at hand, there is no necessity for these to be supplied by secretion from other vessels.

The subject is one of too great magnitude for me to enter upon fully at present; but at the same time it is absolutely necessary that the ground should be cleared before we can form an unprejudiced judgment regarding the morbid processes which take place in veins. I will, therefore, offer one illustration only, which will, however, I think, be sufficient to establish the points which I have touched upon. I have here the drawing of a preparation now in the museum of King's College. In this case some cotton wadding was introduced into the cavity of a vein, and a similar piece into the peritoneal cavity of an animal forty-four hours before death. The means were thus afforded of testing, by direct experiment, whether these parts were really analogous in their morbid actions. The result was such as I confess I had anticipated. The cotton wadding which was introduced into the peritoneal cavity was surrounded by firmly-adherent lymph, whereas the cavity of the vein, from which the blood had been carefully excluded, contained no lymph at all. Its lining membrane presented rather a redder appearance than usual, owing, probably, to the increase in the size and number of the vessels in its cellular coat. Its valves, two sets of which were in contact with the cotton wadding, had not lost their natural transparency, nor was there any change in their colour. We have, then, here a decisive proof that the blood-vessels are not analogous in their morbid actions to the serous membranes of the body, and especially that they do not, like them, readily supply those secretions which are the common products of inflammation.

You will, then, doubtless, be ready to ask me, whence are those materials derived which have the appearances of lymph and of pus, and which are so frequently found in the interior of the blood-vessels. They are deposits undergoing various kinds of changes from the blood itself, and will never be found, until these changes are far advanced, to have any intimate connexion with the sides of the vessel in which they are contained. This is a point of some importance in the consideration of these cases; for lymph secreted as the result of inflammation always adheres firmly to every part of the surface with which it is in contact. This is, as I have said, not the case with the fibrine when first deposited in the interior of the blood-vessels.

The fibrine once separated from the circulating masses of the blood, may undergo various changes. One of these is its liquefaction. The mass may become softened down. The softening proceeds from the centre towards the circumference. This is illustrated in this preparation, where the central portions have been softened down, and have escaped, leaving the external and firmer parts in contact with the lining membrane of the vein. Large quantities of white purulent-looking fluid may in this way be formed in the veins; and it will afford a very nice subject for any

gentleman who will undertake the investigation, to ascertain the qualities of this fluid, its actions, and its microscopical appearances as compared with pus.

Having, I trust, shown that pus is not so readily secreted in the veins as has been generally imagined, I should have little difficulty in giving other reasons to prove that, even where it is so secreted, there would be little ground for maintaining the theory of the formation of secondary deposits upon the supposition that the pus-globules were mechanically retained in the structure of the organs through which they passed.

Time, however, will not permit me to enter more fully upon this part of my subject, which I the less regret since pus will not, under ordinary circumstances, circulate with healthy blood.

Corresponding to the three principal physical changes in the blood which I have mentioned to you as readily appreciated by the sight and touch, are a number of secondary changes consequent upon them, and occurring in distant parts of the system. But these cannot always be recognised as distinct diseases in the living body, or even in *post-mortem* examinations upon the dead; and I must beg of you to remember, that, although I shall attempt to describe them separately, yet that cases will often occur in practice which partake of the characters of two or more of the forms of disease which I propose to notice. Instances will, however occasionally present themselves which will afford well-marked specimens of each variety.

The first form to which I will allude, is that which is characterised by the tendency of the blood to coagulate, in consequence of the admixture of some morbid matters.

Now, whenever this tendency is manifested, the blood passes with difficulty through the vessels, and although it may not be arrested at once in its circulation, yet it is rendered often darker and more viscid than natural. Should the coagulation take place at once, the portion of blood affected, together with any extraneous matter it may contain, is fixed and localized in a particular spot. But, should this effect not immediately take place, the vitiated blood may continue its circulation. Its passage through the vessels will then be less free, its fluidity will be impaired, and there will be a constant tendency for it to stagnate, producing the appearance of congestion at different parts. This tendency will naturally manifest itself in a greater degree in some parts than in others. The action could scarcely take place where the current of the blood is naturally rapid, or where it is impelled through the vessels with much force, as in the arteries. We should, therefore, naturally expect not to find this effect frequently produced in any of the large vessels of the body. The aggregate diameter of the branches derived from the trunk of any blood-vessels is, as you know, much larger than the trunk itself; and it necessarily follows, that in the circulation of the blood the rapidity of the movement in the larger vessels compensates for the slower movement in the large collective area of the smaller branches. For this reason, we seldom find that the blood coagulates in the larger veins, in the heart, or in the arteries during life, although instances may be given of this action in all these situations.

We should naturally look for this effect where the propelling and retarding forces were nicely balanced, in those situations where the blood was divided in the smallest quantities, and where its motion was most tardy. Now, these are precisely the circumstances under which we generally witness this effect. In the delicate internal structure of organs where the blood is minutely divided, and where its circulation is comparatively slow, a few scattered vessels may sometimes be observed congested and distended; at other times, these may be more in number, but the most frequent appearance is that of a more or less oval mass of dark livid congestion. In the majority of instances, the system of minute blood-vessels to which the vitiated blood would first be carried in the natural course of the circulation, is that in which such appearances are found. The blood, as you well know, passes from every part of the body, continually increasing in the rapidity of its motion till it reaches the heart. During its transit, the force of the circulation prevents any stagnation except in the severest cases. From the heart the blood is conveyed to the lungs; and as its stream is divided and subdivided, its motion becomes slower and slower; and in the most minute branches of the pulmonary vessels it is that the effects I am describing most frequently manifest themselves. Blood vitiated in the way in which I have supposed, does not, however, necessarily stagnate at the first system of minute tubes into which

it is conveyed. It may pass several times in the course of the circulation, before it is arrested in its progress. Thus, in cases of injury of the head, the secondary effects of suppuration in the diploë of the bone may fall upon the liver, in which case the contaminated blood would, of course, have previously passed through the lungs; and, on the other hand, I have known secondary abscesses in the lungs follow the ordinary operation for hemorrhoidal tumours, where the vitiated fluid must have first passed through the liver. Such instances, I need scarcely remind you, are with much difficulty reconciled with the mechanical theory, so long and so ingeniously maintained, that these secondary deposits have their origin in the lodgment of pus globules in capillary tubes which are not sufficiently large to allow their transit.

Now, the disease under consideration is essentially the same, in whatever part of the vascular system its effects may be manifested,—whether the blood has stagnated in one of the larger vessels of the body, or in the interior of some organ, the subsequent changes are strictly analogous; and the subsequent actions are the same, (although they may differ in intensity and in the time of their development,) whether the morbid matter is directly introduced into one of the larger veins, or whether it is conveyed, by means of the circulation, to some distant part. There is, however, this important point to be considered, viz., that vitiated fluids directly introduced and retained in a vein are likely to be in a much more concentrated form than after they have been mixed with fresh portions of blood in the course of the circulation. Still, the morbid processes by which an abscess is formed in the course of a vein, in the primary and in the secondary form of the disease, are similar. The coagulum, containing some vitiated fluid, which is lodged in the vessels, becomes a source of irritation, and we may judge of the action that takes place in the smaller veins of the body by that which we can trace in the larger.

When any foreign matter, either in a solid or a fluid form, is detained in a vein, the cellular tissue around becomes infiltrated with serum. If the vein is near the surface of the body, the skin becomes swollen, red, and tender. Should the irritation continue, the cellular coat of the vein will become greatly thickened, so that, when it is cut across, the divided extremity will remain open like that of an artery. The lining membrane of the vein will become red, being stained by the imbibition of the colouring matter of the blood. Should the irritation continue, the cellular tissue on the outside of the vein will suppurate, and a series of little abscesses will form around the affected vessel. It is important to remark, that the pus is here first produced outside the vessel. But during this time other changes will be going on within. The coagulum of blood may become more or less adherent to the sides of the vein. Its central portions may become deprived of their colouring matter; and, if the disease continues, they will become softened down. The whole of the surrounding parts will then become blended together by effusion of lymph, and, upon a section, they will often present a uniform lardaceous surface where the different structures can no longer be distinguished.

In the interior of the lungs, where this process can be best observed in its secondary forms, a deep purple congestion of one or more of the lobes of the lungs will first take place. The congested patch will become hard from the effusion of lymph. The hardening will extend from the centre towards the circumference. In the interior of the indurated and congested portions, some small collections of white fluid will then present themselves. These are doubtless derived, as in the case of the larger veins, from two sources—from the suppuration in the cellular tissues around the vessels, and from the softened coagula within them. As soon as the fluid begins to appear, the affected portion is softened, and easily broken down. The softening gradually proceeds in the same order as the induration, from the centre to the circumference of each affected part, until each patch is converted into a collection of purulent looking fluid.

This process, or one analogous to it, may, as I have said, take place in any part of the vascular system. The morbid matter may produce it at the point where it is first introduced into a vein, or it may travel some inches along its canal, and there be arrested; or, finally, it may pass through the central organs of the circulation, and its effects may then be manifested in any part of the system.

Now, it will often happen that a coagulum, when first formed, may be sufficiently firm to retain any morbid matter which may happen to be in its interior; but after a time, this may become softened down, and the fluid resulting from that liquefac-

tion may escape into adjacent veins. The same thing may happen in certain states of the constitution, with a regard to a coagulum of simple unmixed blood. The coagulum may become softened down, and subsequently mixed with fresh portions of blood. One of two things may then happen; either the dissolved clot may terminate the coagulation of the fresh portions of blood with which it comes in contact, or else it may be carried forward in the general course of the circulation, producing its secondary effects at a distance. If the newly-formed coagulum is sufficiently firm to retain the dissolved matter, an irritation will be set up around the vein, such as I have attempted to describe as resulting from the direct introduction of morbid matter. This irritation will probably terminate in suppuration around the vein; the contents of the vein will then become softened down more or less perfectly, and will be discharged with the pus of the surrounding abscess.

Three or four cases of this kind have presented themselves in the hospital during the last few months,—cases where abscesses had formed in the course of a varicose vein, in the process of its obliteration. In these instances no constitutional symptoms usually are produced beyond the slight degree of fever which accompanies the formation of a common abscess. But there is one very interesting case in the London Ward, where some unusually severe symptoms presented themselves. He is a man of a very phlegmatic disposition, on whom I operated for the obliteration of varicose veins. The coagulum in the upper part of the saphena vein in this case remained quite firm; but the lower coagulum near the knee softened down, and gave rise to a good deal of constitutional disturbance. Owing, however, to the complete obliteration of the trunk of the vein in this case, none of the fluid derived from the dissolved clot could pass directly into the circulation in its usual course. There was, therefore, no extension of inflammation in the course of the vessel; but considerable redness and swelling extended to the back and inside of the thigh, and one or two fresh abscesses formed in these situations. These symptoms indicated, I have no doubt, that some of the dissolved matter, which could not find its way along the obliterated trunk of the vein, gained admission to some collateral vessels; but, being detained in the smaller anastomosing branches, probably by a fresh coagulation of their contents, it there gave rise to the symptoms observed.

If the principles of the pathology of this disease, as I have endeavoured to illustrate them, be correct, you will, as I have already said, have little difficulty in forming a judgment of what should be in general the mode of treatment. The security of the patient in the early stages of the disease, before any internal organ is affected, depends upon the firmness of the coagulum formed in the veins originally implicated.

Bleeding, calomel, and antimony have a tendency to diminish the coagulating power of the blood, and are, therefore, I apprehend, not suitable remedies for this disease. If such means be employed, they will loosen the adhesions, and dissolve the connexions formed between the coagulated blood and the sides of the vein. In this way the local appearances of irritation may be subdued. The redness, the swelling, and the pain of the part may be in some cases entirely relieved; but this is only because the vitiated contents of the vein are dissolved and carried to some other part of the system; and while the surgeon is congratulating himself upon the disappearance of the local malady, he may be surprised to find other symptoms of a still more formidable kind developing themselves in some distant part.

The plan of treatment which I have now for some time followed in these cases is to give the patient all those articles of diet or of medicine which are calculated to support his general strength, and especially such as are calculated to maintain unimpaired the coagulating power of the blood.

I do not say but that, in some of the congestions arising from and connected with this disease, local bleeding may not be of advantage, especially as it may tend to unload the distended vessels of their morbid contents. But this treatment is not at all incompatible with the use of every means calculated to support the patient's general powers. In several cases I have now from the earliest stages of the disease given tonics freely, and especially I have used as medicine the different preparations of bark. Both in the primary and secondary forms of this disease, wine or other stimulants may often be given with much advantage. The patient to whose case I last alluded, took at one time as much as twelve ounces of brandy

a-day, with the most signal and marked benefit. The effects of such means upon the system must be of course carefully watched; but, under due regulation, I have no hesitation in affirming, that in any given number of cases, the tonic mode of treatment, pursued from the commencement, would prove far more efficacious than any of a different character.

I have now gone over one only of the divisions of my subject. There yet remain for consideration two scarcely less important classes of diseases, namely, the secondary effects produced by an abnormal disposition in the blood to separate into its different elements, and the secondary effects of the decomposition of portions of the blood induced by the direct admixture of vitiated fluids, in consequence of accidents or operations. These I shall hope to have an opportunity of bringing under your notice upon a future occasion.—*Med. Times and Gazette, Jan.* 29, 1853, *p.* 105.

150.—ON ORGANIC CHEMISTRY.

By Dr. A. W. Hofmann, F.R.S., Professor at the Royal College of Chemistry.

[Organic chemistry is supposed to be in contradistinction to inorganic chemistry; treating alone of those substances entering into the constitution of vegetables and animals. But in reality, plants and animals have no special elementary constituents of their own, all their elements being found in compounds of undoubted mineral origin, yet]

Among the twelve or fourteen elements, there are four which predominate in the composition of vegetable and animal matter; that is, if the vegetable and animal kingdoms be taken as a whole, and those individual plants and animals which exhibit a preponderance of some other element be regarded as exceptional cases. These four elements, let me repeat it, are carbon, hydrogen, nitrogen, and oxygen. They differ from the rest, not only by the prevailing quantity in which they are present, but also by the distinguishing peculiarities exhibited in several other points. If animal or vegetable matter be exposed to a high temperature, free access of atmospheric air being admitted, we find that a part of it is dissipated, while another portion cannot be volatilized, and is no longer affected by the process of heating. Now, analysis shows that in this case it is exactly the carbon, hydrogen, nitrogen, and, to a considerable extent, also, the oxygen, which are carried off, while all the rest, whatever their nature may be, remain behind. Take as an illustration the bone of an animal. It contains carbon, hydrogen, nitrogen, oxygen, phosphorus, and calcium. The three former, together with a portion of the oxygen, are present in bones in the form of gelatin or glue; the rest of the oxygen, together with the phosphorus and calcium, in the form of phosphate of lime. Now, if this bone be heated in the air, the whole of the gelatin is gradually burnt off, nothing but phosphate of lime remaining behind. I hold in my hands two pieces of bone of about the same size—the one fresh, still contains the gelatin; the second has been subjected to the action of the heat. They are very similar in shape and external appearance; a difference, however, will become at once perceptible if you compare their weights,—the burnt being much lighter than the unburnt bone.

A similar behaviour is exhibited by all vegetable and animal substances. When submitted to combustion, their carbon is converted into carbonic acid, their hydrogen into water, whereby the greater part of their oxygen is volatilized; the nitrogen escapes as such, the rest of the elements remain behind, in the form of what is generally called the ash of animal or vegetable matter. And this effect is by no means exclusively produced by combustion. All vegetable and animal matter, when no longer under the influence of vitality, undergoes gradually a similar change, becoming subject to those grand processes of destruction, daily accomplished under our eyes, which are designated by the terms "decay" and "putrefaction." The ultimate result of these processes is similar to that of combustion.

We might accordingly distinguish the elements which enter into the composition of plants and animals as *volatilizable* and *fixed*, or, if you please, as *atmospheric* elements and *earthy* elements; for when separated in these processes of destruction, the former mingle with the atmosphere, while the latter mix with the mineral matter of the soil. The distinction in vegetables and animals of atmospheric and

earthy elements appears even more appropriate if we glance for a moment at the mode in which plants and animals are formed. The researches of agricultural chemistry have shown, that, while the growing plant finds ample stores of all its fixed elements in the mineral constituents of the soil, it is the atmosphere from which it derives its carbon, its hydrogen, nitrogen, and oxygen,—the very elements which, as we have seen, the dying plant returned to the atmosphere. The animal, feeding as it does on plants, likewise receives, although less directly, its carbon, hydrogen, &c., from the atmosphere. The distinction of atmospheric and earthy elements, therefore, appears perfectly justified, whether we consider the origin of plants and animals, or whether we regard the ultimate results of their destruction.

Both the atmospheric and the earthy elements combine with each other to form a very great variety of compounds, which are called the "proximate constituents of plants and animals." Starch, sugar, the various vegetable and animal fats, the great number of acids occurring in plants and animals, such as tartaric, citric, malic, benzoic, hippuric, and uric acids; the host of alkaloids of a similar origin, such as quinine, strychnine, morphine, caffeine, urea, &c.; the various colouring matters, the essential oils and resins, &c., are among the endless variety of proximate constituents that are formed by the atmospheric elements. On the other hand, the earthy elements are associated to compounds less varied perhaps, but still presenting a considerable diversity of composition,—the sulphates of potassa, soda, and lime; the silicates and phosphates of these bases, the corresponding chlorides, &c., are the most frequently-occurring forms in which the mineral elements either exist in vegetable or animal structures, or are left in their ash after incineration.—*Med. Times and Gazette, Feb. 5, 1853, p. 131.*

151.—ON THE ARREST OF CONTINUED FEVER BY CINCHONISM.

By J. Ogden Fletcher, Esq., Surgeon to the Manchester Union Fever Wards.

[Mr. Fletcher remarks, that, in 1847-48, during the Manchester epidemic, he came to the conclusion that in all cases of fever, with tendency to bowel complication, the early administration of quinine would check, if not cut short, the disease. The result of his observations in eighty cases of fever, is as follows:]

1st. In the majority of the cases, cinchonism established a permanent convalescence within forty-eight hours.

2ndly. In the cases where the typhoid character was established prior to the use of the remedy, five-sixths were convalescent within fourteen days.

3rdly. In children and patients under puberty, suffering from uncomplicated typhus, nine-tenths were discharged cured within 14 days.

4thly. In cases complicated with pneumonia, and attended with rose-coloured spots, the latter disappeared under cinchonism; but a more active form of fever often supervened, which required depletion and other active remedies.

5thly. In all cases where the complication was well established—whether pneumonia, ulceration of the bowels, or cerebral congestion—cinchonism produced very little good.

In illustration of the special effects of the drug on the disease, I subjoin the following cases from the register:—

Case 1. Mary Burns, aged twelve, plethoric habit, was admitted on Feb. 12th, 1853, complaining of severe pain in the head and limbs, with sensation of coldness. Six days ago got wet, and remained in her damp clothes all day. She sat for some time in a damp cellar, where her parent lived, and, on the following morning, had a severe "shivering fit." From this time she became gradually worse, and, when admitted, there was occasional low delirium, with constant dull aching pain in the forehead; slight deafness; pulse 92, and weak; respiration short and hurried; skin hot and dry; face flushed; conjunctivæ congested; tongue coated with dry, brown fur, with transverse cracks; sordes forming on the teeth; anorexia; bowels constipated; urine scanty and high coloured.

℞. Quinæ disulph gr. xv., acid sulph. dil. ℥xv., aquæ puræ ʒ iij. Misce, capt. ʒ j., secundis horis. Milk diet.

Vespere.—Pulse 90, fuller; tongue less dry; headache much relieved; delirium less; bowels open.

13th. Slept well; headache gone; delirium gone; less thirst; tongue moist, and less furred; skin moist, and cooler; respiration more easy; pulse 83, full; takes a little food.

14th. Had a good night; no headache or delirium; thirst gone; tongue much cleaner, and moist; the cracks gone, and the sordes disappeared from the teeth; skin cool and natural; urine free; appetite good, and general appearance much improved.

From this day she rapidly gained strength, and was discharged cured on the 18th, not having taken any medicine after the first twenty-four hours.

Case 2. John Barnes, shoemaker, aged 39, admitted on the 12th of February, with the skin hot and dry, and numerous rose-coloured spots; low, muttering delirium; partial deafness, trembling of the limbs; congestion of the eyes, and severe pain in the head; loss of power in the limbs, and complaining of "sinking about the heart;" pulse 94, very small; respirations 34, and laborious; tongue dry and loaded with brown fur; great thirst; anorexia; bowels regular; urine scanty and high-coloured. Milk diet.

℞. Disulph. quinæ gr. vj. 3tis horis.

13th. Slept for several hours; delirium gone; tongue moist, and less furred; thirst diminished; skin cooler, and moist; pulse 90, fuller; respirations less frequent; urine more plentiful; has taken a little food.

Continue the quinine.

14th. Continues to improve; rose-spots quite gone; skin cool; no thirst; tongue clean; appetite good; bowels acted freely.

Continue the quinine.

From this time he improved very rapidly; on the 16th was put on generous diet; on the 24th was discharged remarkably strong, and expressed himself as well able to work.

Case 3. John Mollin, labourer, aged 29, was admitted on the same day as the last case, and with nearly similar symptoms. He had, however, in addition, extensive pneumonia of the right lung.

℞. Quinæ disulph. gr. vj. 3tis horis.

On the second day after admission, the typhoid symptoms abated, the fever assuming a more inflammatory type, and the pneumonia becoming more active. On the fifth day, the quina was discontinued, and antimony, calomel, and opium resorted to for the pneumonia. On the second day of this treatment he died.

A post-mortem examination showed the whole of the right and the lower part of the left lung in a state of hepatization, the rest of the viscera quite healthy.—*Med. Times and Gazette, April* 23, 1853, *p.* 422.

152.—FIBRINO-ALBUMINOUS DIATHESIS.

By Dr. Ogle.

Dr. Ogle presented to the notice of the Pathological Society one or two specimens removed from patients in whom there had existed what may be termed a "Fibrino-albuminous Diathesis;" *i. e.*, a general tendency to the deposition of a fibrine-like substance in various parts of the body, in the same manner that we have a proneness to the deposition of carcinomatous or scrofulous substance, or the lithates in the gouty, the scrofulous, or the cancerous diathesis. The specimens brought forward were as follow: Portions of two hearts, in which, along with manifestations of the tendency in other parts of the body, the columnæ carneæ of the left ventricle were to a considerable extent consolidated and rendered opaque, and especially so at their apices, partly by conversion of the muscular substance itself into fibrous tissue, and partly by the presence of the same tissue between the muscular fibres; also a portion of the capsule of a spleen, which was quite opaque, and the greatest part of which was also extensively thickened, even to the extent of about half an inch, having assumed quite the consistence of cartilage, and containing also calcareous matter; also a portion of the colon, which, throughout all its coats, was exceedingly thickened and consolidated, having attached to its inner surface a thick coating of firm granular fibrine, in parts removable only with difficulty, and obviously of long standing. This last specimen was very interesting, as being somewhat rarely found. The entire colon, the rectum, and the lower half of the ileum, were similarly affected. The woman, aged 26, had been subject to

occasional œdema of the integuments for ten years, but for two weeks had had much cough and dyspnœa. When admitted into St. George's Hospital, the lips and face were dusky and bluish, the pulse was feeble, the tongue coated, and the heart's impulse great, and along with the systole was a murmur of some intensity, heard chiefly at the apex. The urine was highly albuminous, and, three days after admission, complaint was made of pain at the cardiac region, and a pericardial friction sound was heard. Counter-irritation and purgatives were resorted to. Subsequently, epistaxis and vomiting came on, and, about a week before death, diarrhœa and pain in the abdomen, with dark-coloured offensive evacuations, set in; typhoid symptoms supervened, and she died about one month and a few days after her admission into the hospital. On *post-mortem* examination, there was found a contracted, indurated, and lobulated condition of the kidney, with adherent capsules, and but slight distinction in aspect between the cortical and the pyramidal portions. There was also recent fibrine in the pericardial and in the peritoneal cavities, and much old adhesion in the pleural layers. The heart was hypertrophied, but quite natural as to the valves, orifices, &c. The suggestion of a "fibrino-albuminous diathesis," in connexion with which the specimens were adduced, was alluded to at p. 356 of the "Transactions" of the Society for 1851–52. This general or universal condition appears so frequently to exist that it may deserve a somewhat prominent position in pathological considerations. It is often noticed that, in the course chiefly of asthenic disease, what is called a "low inflammation" of various parts of the body simultaneously exists, and after death it is found that the vessels of the affected part have given an outlet to a substance which acquires the name of "recent lymph." For the most part, no actual pain is experienced, but the chief immediate symptoms are owing to the presence and mechanical interference of fluid which is thrown out along with the more solid parts. Ofttimes, along with the diffusion of this fibrino-albuminous substance into textures, or on to surfaces, chiefly the serous ones, it may be seen that solid and massive portions, with definitely marked outlines, exist in the viscera, and have received the name of "fibrinous blocks." These are not unfrequently seen in the spleen and kidney, sometimes in the liver, and occasionally in the heart, as shown by Dr. Ogle and others to the Society during the last session; but the pressure of these masses, which were doubtless deposited, in the first instance, in a fluid state, does not appear to be the result of, or dependent upon, an atheromatous state of the arteries supplying the affected organ; but when an atheromatous state of the arteries supplying the organ did exist, both this state and the condition of the viscera are to be attributed to a common cause; neither, again, can they be referred, as some have referred them, to portions of fibrine, which, on being deposited in distant parts of the vascular system, have been carried along in the circulating stream, and lodged in the affected organ. The atheromatous condition of blood-vessels seems to be owing to this general diathesis or tendency alluded to, and perhaps is, on the whole, the most destructive and most important manner in which it manifests itself. It is very formidable on many accounts, for it is probable that, in addition to the formation of aneurisms by rupture of stiffened and resisting arterial tunics, &c., and also to more general dilatations, affecting most seriously the heat thereby, it gives rise, in most cases, to so-called cerebral, spinal, pulmonary, or other apoplexies, for these latter seem owing proximately to the rupture of minute vessels which have become inelastic and rigid; and this inelasticity seems to be the result of albumino-fibrinous elements of the blood, eliminated either within the vessels themselves or without them, and which have subsequently undergone fatty or calcareous degenerations. In some cases, as Mr. Barlow, of the Westminster Hospital, had suggested to Dr. Ogle, the fatty matter might be owing to direct conversion of the tissues of the vessels, without having, as it were, passed through the albumino-fibrinous stage. It is quite possible that at times this might be the case, as we often see in the fibres of the heart, but very frequently, as might be observed in a preparation of a portion of an atheromatous artery dissected and shown along with the foregoing specimens to the Society, the deposit was so large in quantity and so thick, that, in this instance at least, it seemed highly improbable that its presence could have depended on the simple conversion of the natural tissues. Various diseases and disorganisations of viscera, independent of the presence of solid portions of fibrine-like substances within them, seem to originate

in this tendency or diathesis. No better example of this peculiar diathesis could be selected than is afforded by Bright's disease of the kidneys, as it exists in many instances. Such disease seems to be the result of a peculiar state of the blood, under which a liability to the deposition of fibrine-like material is established within the organ, either diffused throughout its texture or deposited in solid masses in particular spots; not unfrequently it invades the epithelium cells, which are seen under the microscope to be large, crowded, and full of a yellow so-called protein compound, which is sometimes met with in the urine during life under the form of "fibrinous casts." The liver, again, affords a common instance of the same deposition, the frequent induration, the consolidation, and cirrhosis, or knotted condition, being, no doubt, often due to the presence of fibrine. As an exhibition of the same tendency, we have also the opacity and thickening of the various capsules and membranes within the body, as the capsule of the liver, of the spleen, patches of opacity on the pleural and pericardial serous membranes, thickening and opacity of the membrane forming the endocardium and valves of the heart, also old adhesions of various membranes. In this idea, Dr. Ogle was so fortunate as to have the concurrence, at least in part, of Dr. Handfield Jones, who, in a paper on "Cholagogue Medicines," read before the Medico-Chirurgical Society, had advocated a similar tendency in connexion with disease of the liver and "stiffening" of various membranes.—*Med. Times and Gazette, Dec.* 18, 1852, *p.* 630.

153.—CASE OF RHEUMATIC PERICARDITIS AND PNEUMONIA.

By Dr. R. B. Todd, F.R.S., &c.

[Some peculiar phenomena presented themselves in this case, though the lesions were early and fully recognised. The patient was an Irishman, aged 20, and admitted into King's College Hospital, January 27, 1851. Symptoms of a severe attack of rheumatic fever came on five days before admission. The left knee-joint was the most affected, considerable effusion having taken place in it.]

There was no satisfactory cause for this attack, as the patient had not been exposed to cold in any way, and had been in excellent health just previous to its occurrence. He was a strong and well-nourished man, and did not appear by any means a bad subject for the malady. On the day (28th) after our patient's admission, it was observed that his breathing was embarrassed and quickened. And when we came to examine him, we found evidence of the existence of pneumonia affecting the posterior part of the lower lobe of the left lung, in which situation there was dulness on percussion, and the breathing was bronchial, while the vocal vibrations were felt by the hand applied to the wall of the chest. He was treated in the ordinary way. A gentle purgative was administered, turpentine stupes were applied to the chest, and afterwards a blister was put on. The joints were wrapped up in cotton wool covered by oiled silk, and he had ten grains of Dover's powder at bed-time.

On the 29th, our attention was attracted to a peculiarity in the pulse, which having been hitherto at 108 and 100, had now fallen to 92, and had become intermittent. This change of pulse excited my suspicion that there was something wrong about the heart, as we seldom in such cases find a sudden change in the character of the pulse without there being some mischief commencing in that organ. For this reason the state of the pulse is often a most important guide in rheumatic fever, and any sudden change in it, whether it be from quick to slow, or *vice versâ*, or whether from being steady and regular it becomes vacillating and intermitting, should instantly direct your attention to the heart. There is the greatest variety in the way in which inflammation disturbs the heart's action, in some cases depressing it and causing it to vacillate and intermit; in others creating considerable acceleration of it. In this case the heart's action became decidedly intermittent, and upon examination a faint rubbing sound was heard at the base of the heart. There was also some suspicion of the existence of a bellows-sound at the heart's apex; but as the sound was extremely faint, it was impossible at the time to decide whether it was a faint bellows-sound or a friction sound. The subsequent course of the case leaves no doubt that it was the latter. I notice the

fact here to found upon it a remark, that it is often very difficult, or even impossible, to determine between a bellows-murmur and a friction sound. I have no doubt that a faint sound of the latter kind is often mistaken for a bellows-murmur, and has probably led some physicians to assign to endocarditis a greater frequency of occurrence than it can justly claim. So far we had only the quality of the sound to rely upon—a feature by which an experienced ear will often have no difficulty in determining its true nature, but which is far from affording equivalent evidence. However, as the case went on, we were able to obtain other characters more easily appreciated and more generally to be relied upon.

There was, then, up to this point, quite sufficient evidence of the existence of pneumonia and pericarditis. Let me remark here, that pneumonia is more frequent in rheumatic than in other constitutions, and is now fully recognised as one of the complications of rheumatic fever, for which the practitioner must keep on the look-out. The rheumatic pneumonia is apt to attack both lungs; it has likewise a disposition to wander, appearing in one part of the lung, then leaving this, and invading another portion. In this patient both these features were present; the pneumonia disappeared from the base of the left lung, and attacked a circumscribed region on both sides, situated a little below the spine of the scapula, and extending to within a short distance of the vertebral column.

To complete the signs of pneumonia in this case, we found that our patient expectorated sputa, which were very viscid, and were tinged with the rusty colour so characteristic of pneumonic expectoration. The treatment hitherto adopted consisted of counter-irritation by turpentine stupes applied freely over the posterior surface of the chest, and by a blister placed on the region of the heart. He was well purged with carbonate and sulphate of magnesia, and took a grain of opium, with nitre and ipecacuanha every four hours.

On the 30th of January, the physical signs already described had become more distinct. The rubbing sound was louder, and exhibited at once the peculiar roughness, as well as the "to-and-fro" character, by its accompanying both systole and diastole. All indications of a bellows-murmur had now disappeared. The signs affecting the lungs began to improve, and there was distinct evidence that resolution was taking place; coarse crepitation was audible where the bronchial breathing had been heard, and the sputa were less viscid, but the signs of oppression of the heart had increased. The respirations were more frequent, and of a catching character. He was now breathing 44 times in a minute, and each inspiration was accompanied with a peculiar catching movement of the diaphragm, as in hiccough; but there was ample evidence that the air entered the greater part of both lungs. In the lower part of each side, particularly behind, we detected a moist crepitation accompanying both inspiration and expiration; and when the hand was placed over this part of the chest, a peculiar rough and vibratory sensation was distinctly perceived, such as would be caused by two rough surfaces moving the one upon the other. The crepitation was at first very moist in character, and it became a question whether it was intra-pulmonary, and due to the passage of air through moist secretion in the bronchial tubes, or whether it depended upon the presence of moist lymph on the surface of the pleura. Sometimes large flakes of loose moist lymph are formed on the surfaces of the pleural membrane, and, by the rubbing of such flakes together, a sound is generated very like the large crepitation which occurs in bronchial tubes filled with mucus. And, in some instances you will find it very difficult to distinguish the one from the other. Generally speaking, the pleuritic rubbing accompanies both inspiration and expiration, while the bronchial crepitation either accompanies inspiration only, or is much more intense during inspiration. In the present case, the sound was equally distinct with inspiration and expiration, and soon lost its very moist character, assuming the creaking nature of the friction-sound. Thus we now found an additional complication in the case,—a pleural rubbing sound had made its appearance, and was accompanied with respiration of a peculiar catching character, as if the diaphragm was impeded in its action. And there was, likewise, not only that remarkable expression of restraint which the countenance is so apt to assume when the pericardium is affected, but it now exhibited somewhat of the sardonic grin, which, accompanying the catching movement of respiration, led me to infer that the pleurisy at the lower portion of each side had extended to the diaphragm. We had, then, in addition to the pericarditis,

pleurisy; and not only so, but the distressing and dangerous form of diaphragmatic pleurisy.

The symptoms of irritation of the diaphragm, however, soon subsided, and for some days matters seemed to go on well. Our patient had been put upon mercury (calomel and opium) and the blistered surfaces were dressed with mercurial ointment. In the course of six days his gums became sore, and the usual fetor affected the breath. This, under ordinary circumstances, I should have regarded as a favourable sign, since in general, when the pericardial inflammation is very extensive we do not find the mercury take hold of the system so quickly; however, in this case the speedy action of the mercury might have been attributed to some degree of disease of the kidney, for albumen was present in increasing quantities in the urine.

The symptom which now became most distressing to our patient was quick breathing. The number of respirations never fell below 32, was generally 40, but on the slightest exertion it would rise even as high as 70. This was partly to be attributed to his temperament, which was highly nervous and anxious. He was extremely impatient of pain, and was exceedingly restless and hard to please. It was not caused by anything wrong with the lungs, for the pleuro-pneumonic signs had greatly abated; it was mainly referrible to the state of the heart. There was an increased extent of dulness over the precordial region, chiefly towards the right side, and this I attributed to some amount of fluid effused into the pericardium; but you will remember that I stated that this could not have been very extensive, as the friction sound continued to be audible at the heart's apex as well as at its base. Now you may still continue to hear a pericardial friction-sound at the heart's base, notwithstanding the presence of fluid in the pericardium; but such will not be the case at the apex, for this will be pushed back by fluid accumulating in the bag, and away from contact with the parietal serous layer, unless there have been some previous band of adhesion stretching between the two surfaces. For this reason, I felt certain that as yet no great amount of liquid effusion had taken place, but there was too much reason to fear that the surface of the heart, in front at least, was covered with lymph.

A new sign now attracted our attention, and puzzled us not a little, and ultimately led me somewhat astray in diagnosis. On the 7th Feb. we found great resonance of the lower half of the left side of the chest behind: in fact, it had become tympanitic, and there appeared to be a bulging of the walls of the chest in this situation. Upon listening over this region, we heard a sound resembling that produced by air passing through liquid and creating a succession of bubbles, which broke upon the surface with a metallic sound,—this sound was synchronous with and apparently caused by inspiration. The chest was likewise tympanitic on percussion at the left side in front, and in the lateral region. Metallic tinkling was very manifest over the whole of the lower part of this side of the chest on succussion.

Now, a highly tympanitic state of the chest coming on suddenly, or with great rapidity, naturally suggested the idea of air getting in some way into the pleural cavity. This might take place either by the rapid secretion of air in that part, or by the rupture of a small abscess of the lung, and the perforation of the pulmonary pleura, through which air would readily pass at each inspiration into the cavity. But there was one sign absent in this case, which must of necessity have occurred for a time at least, if a perforation existed, namely, amphoric blowing,—a sound precisely resembling that caused by blowing air into a glass jar containing air and water.

Had the signs which I have enumerated,—namely, the tympanitic percussion sound, and the gurgling and metallic tinkling, been found on the *right* side, they could not have been explained otherwise than on the supposition, that air and fluid existed in the sac of the pleura, or in some large thin-walled excavation of the base of the lung. But these signs were on the left side; and here, you will bear in mind, is the stomach, which, when large and distended with air, may push up the diaphram very much, so as to incommode the heart, and interfere with the freedom of its action. A large and dilated stomach, well filled with air, will render the lower third or fourth of the left chest tympanitic, and if it be partially filled with liquid it will give metallic tinkling on percussion. Now, our patient was just

the subject in whom we might expect phenomena such as these to be caused by the stomach. He was one of the hard-working, ill-fed class of Irish labourers, who, living chiefly on potatoes, and taking a good deal of liquid also, are apt to have very large stomachs, in which wind is largely generated, and accumulates to a considerable extent. There is no doubt that we might have rested content with this explanation of the signs in question, and more especially as the tympanitic state remained confined to the lower part of the chest in the semi-erect posture, and as there was no displacement of the heart, which invariably takes place when any considerable quantity of air or fluid is effused into the left side of the chest.

The question then was, were these signs, the metallic tinkling, the gurgling, the tympanitic state of the lower part of the left chest, due to air and fluid in the cavity of the pleura, or to air and fluid on a large and dilated stomach? Although I made no positive diagnosis, I confess I leaned much to the former view. The gurgling was so clearly connected with inspiration, as well as with expiration,—a phenomenon which I had not previously noticed thus associated,—and the tympanitic state ascended so high in the chest, that I could not satisfy myself that these signs could arise from a dilated stomach containing air and fluid. And the absence of the other signs to which I have alluded admitted of some explanation. Thus, the pleurisy which we had already recognised, by causing a line of adhesion between the pleurae, would have impeded the ascent of the air, and thus limited the tympanitic state to the lower part of the chest; the same cause, by confining the air within a circumscribed cavity, would prevent displacement of the heart; and, furthermore, the absence of amphoric blowing might be accounted for by supposing that the fistulous opening became plugged up soon after its formation.

The case was further complicated by the occurrence, just at the time these signs appeared, of a profuse purulent expectoration, precisely such as might have come from a pneumoniac abscess pent up in the substance of the lung. We were not kept very long in suspense as regards the explanation of these signs. Our patient began to show evident indications of a failure of vital power. He sweated profusely; his pulse became very rapid and ultimately intermittent and irregular, and his dyspnœa increased, and he died on the 13th. The only new sign connected with the breathing which occurred was this: that on the 11th we found that, close to the inferior border of the scapula, bronchial breathing of a metallic character was audible over a space about the size of a crown piece.

We proceed to the *post-mortem* inspection with not a little curiosity, to ascertain how far the diagnosis was correct. Let me here remind you what that diagnosis was. We made out then, *first*, pericarditis with extensive effusion of lymph; *secondly*, effusion of liquid into the pericardium, but not such as to remove the apex of the heart from contact with the parietal layer of the serous pericardium; *thirdly*, pleurisy at the base of both lungs, with lymph on the pleura in that situation, and also to some extent on the diaphragmatic pleura; lastly, it was conjectured that air had formed or escaped from the lung into a cavity circumscribed by lymph within the pleural sac, and was partially filled with liquid. Before the body was opened, percussion was made over the chest in the region which had been tympanitic during life. It was found that the tympanitic state had disappeared. A puncture was next made in one of the intercostal spaces on the left side, but there was no escape of either air or liquid. It was plain, then, that the last part of the diagnosis was incorrect. I shall explain by and by how the phenomena which we noticed during life were produced.

On opening the chest in the usual way, we found the pericardium distended in great part with fluid. As much as fourteen ounces of bloody serum were obtained from it. The whole heart, both in front and behind, was covered by thick, rough lymph, with numerous papilliform processes projecting from it, and the corresponding surface of partial pericardium was in a similar condition. The apex and great part of the left edge of the heart were adherent to the parietal layer of the pericardium. For this reason the fluid was forced to the right side, and lay upon and compressed the right ventricle.

I show you here the preparation, from which you will see how firm was the adhesion of the heart to the pericardium on the left side. It was owing to this cause that we continued to hear the friction sound, notwithstanding the presence of the fluid in the sac The quantity of the effusion exceeded my expectations,

and certainly the extent of the dulness on percussion did not justify the supposition that a very large accumulation of fluid had taken place. The adhesions on the left side prevented the fluid from spreading to that side, and caused it rather to push the heart back into the posterior mediastinum, and upon the left lung. It is probable likewise that a large part of the effusion took place during the last few days of life. No careful examination of the heart had been made since the 9th (four days before his death), and on that day it was observed that the heart's sounds were muffled.

The effusion of lymph was not confined to the anterior surface of the heart; it covered the posterior surface likewise. So great was the accumulation of fluid in the pericardium, and so much did it press backwards, that a portion of the left lung was found much compressed, and pushed upwards and backwards. The compression was sufficient to produce, in the portion of lung pressed on, that condition which Laennec describes under the name of *carnification*, in which, by prolonged compression the air is expelled from the air-cells, and the lung assumes a non-crepitant, solid, fleshy character. This condition is the same as that which is produced by the compression, of a pleural effusion. It was but a small patch of the lung that was thus carnified, and that corresponded to the situation in which we heard bronchial breathing on the 11th.

The pleuræ on both sides had several patches of this lymph on them, especially over the lower lobes, and the diaphragmatic pleura was likewise similarly coated, that portion on the right side exhibiting the thickest layer of lymph. The bronchical mucous membrane was very highly congested, and as red as velvet, and the tubes were filled with muco-purulent fluid, like what he expectorated.

Thus, then, in all the main points, the diagnosis was correct. It failed, however, to explain the tympanitic state of the lower part of the left chest, and the gurgling and tinkling heard there. All these signs were due to the stomach, which, as we expected, was a very large one. The diminished size of the left lung, owing to its compression by the large heart and distended pericardium, probably allowed the stomach to ascend into the chest higher than it was wont; and the adhesion of the diaphragm to the pleura covering the base of the lung, permitted movements of the chest to be communicated more readily than is usual to the stomach, giving rise to the gurgling which accompanied inspiration and expiration, and to the metallic tinkling which we so often heard.

I think that, in this instance, the error of diagnosis, or, rather, the passing over the right one, was due to my not having attached its full share of importance to the absence of amphoric breathing. The proximity of a large stomach generally distended with a large quantity of air, and always containing more or less fluid, afforded a sufficiently obvious explanation of the phenomena, and which I should most probably have adopted were it not that the tympanitic state reached so high up in the chest. On another similar occasion, a fair test of the formation of the tinkling sound in the stomach may be obtained by applying the ear to the lower part of the chest while you make the patient swallow, and comparing the sound thus produced with that caused by succussion, and by the forcible movement of the chest.

You will not, I am sure, complain that I have dwelt so long upon this highly interesting case. It cannot fail to prove most instructive to all who have carefully studied and watched it. None of us will, I think, hereafter be likely to overlook the importance of a large windy stomach in generating sounds similar to those caused by the presence of air and fluid in the pleural sac.

Now, as to the treatment. This, as you know, was by opium, purgatives, and blisters in the first instance, to which was soon added the exhibition of mercury in full doses. Counter-irritation was used freely to various parts of the chest; and, latterly, when the patient's powers seemed to fail, wine was given in very moderate quantities.

There are some who would say that free bleeding, adopted early, would have stopped the pericardial inflammation at once, and so have saved the patient. The answer to this is as follows: namely, that many cases have been bled, both largely and early, by others as well as myself, and that the result has not been more favourable than in this instance; the patient has died with quite as great a coating of lymph on the heart, and quite as much or more effusion into the pericardium.

Indeed, I have a strong opinion that large bleedings favour liquid effusions; they make the blood more watery, and, by diminishing its coloured particles, impair the vigour of its vital changes.

Again, you will ask, why I did not try local bleeding over the region of the præcordia. To this I reply, because in many previous trials I have found it inadequate to the object in view. If you will take the trouble to refer to a work which I published some years ago upon "Rheumatic Fever and Gout," you will find that I there advocated the application of leeches and blisters over the region of the heart. Since that time, I have learned by large experience to trust to the latter only, and have abandoned very active antiphlogistic treatment in these cases, as being not only ineffective, but mischievous.

As you know, we gave mercury very freely,—a treatment which, although perhaps not always *necessary*, I think ought to be pursued in severe cases, as I cannot doubt that the free administration of mercury tends to limit the effusion of lymph, and also to promote its absorption. Opium was given with the calomel, in frequently-repeated doses. Opium relieves pain, checks the extension of disease, and quiets the nervous system in many forms of serous inflammations. It is of paramount importance in the treatment of peritonitis, and acts very favourably in inflammation of the pleura and pericardium. Free counter-irritation was also adopted here; large blisters were applied to the chest and to the region of the heart, and turpentine stupes were frequently had recourse to.—*Med. Times and Gazette, Dec.* 18, 1852, *p.* 611.

154.—ON TUMOURS.

By James Paget, Esq., Professor of Anatomy and Surgery to the Royal College of Surgeons.

[We have long been desirous of giving to our readers the following abstracts of Mr. Paget's Lectures on Tumours, as they form the most interesting essays on the subject with which we are acquainted; but hitherto our space has been too much occupied by shorter papers. In this volume, however, we find that we can afford room for them.]

Classification of Tumours—Their distinction from adapted hypertrophies, and from those connected with inflammatory exudations; their property of independent growing; their independence in development, maintenance, and degeneration. Relation of tumours to certain hypertrophies of organs, and especially of the thyroid and other glands; their arbitrary distinction from these.—The class of diseases which includes the tumours may be reckoned as a part of the great division named Hypertrophies or Overgrowths. All its members consist in additions to the organised materials of the body, and appear to be expressions of a morbid excess of its formative force; but, in the case of each hypertrophy, the mode is peculiar in which this excess is manifested. If we compare any tumour with one of the hypertrophies that are least morbid—with one of those, for instance, in which the excessive growth is adapted to some emergency of disease, as an hypertrophy of the heart is adapted to some emergency of the circulation—we shall, I believe, always see between them this chief difference; that, to whatever extent the adapted hypertrophy may proceed, the overgrown part maintains itself in the normal type of shape and structure; while a tumour is essentially a deviation from the normal type of the body in which it grows, and, in general, the longer it exists the wider is the deviation. A striking illustration of this contrast may be found in some of the cases of fibrous tumours that grow into the cavity of the uterus. Such a tumour may resemble in its tissues the substance of the uterus itself, having well-formed muscular and fibrous tissues; and, so far as the structures formed in excess are concerned, we might regard the tumour as the result of an hypertrophy not essentially different from that which, at the same time and rate, may take place in the uterine walls around it. But an essential difference is in this—the uterus, in its growth around the tumour, maintains a normal type, though excited to its growth, if we may so speak, by an abnormal stimulus: it exactly imitates, in vascularity and muscular development, the pregnant uterus, and may even acquire the like power; and at length, by contractions, like those of parturition, may expel the tumour, spontaneously separated. But the tumour imitates in its growth no

natural shape or construction: the longer it continues the greater is its deformity. Neither may we overlook the contrast in respect of purpose, or adaptation to the general welfare of the body, which is as manifest in the increase of the uterus as it is improbable in that of the tumour.

Herein we seem to discern an essential difference between the over-growths of tumours and those accomplished by any exercise of the normal-reserve power of nutrition in a part. This power, capable of acting in any emergency, is not a mere capacity of production, neither is it dependent upon circumstances for the fashion of its products; identical with that which actuated the germ, it is equally bound to conformity with the proper type of the part or species in which it is exercised.

An equal contrast may, in general, be drawn between the class of diseases that includes tumours, and all the others that issue in a morbid excess of nutritive formation. We may take, as the example of these, the inflammatory diseases attended with exudation, and say (reserving certain conditions) that in these there is an excessive exercise of formative force—an hypertrophy. But between such diseases and tumours, we shall rarely fail to observe the following differences:—1st. The accumulation of lymph in inflammation appears chiefly due to the morbid state of the parts at or adjacent to the seat of exudation. We have, I think, no evidence that the lymph of inflammation increases by an inherent force—any attraction of self-organising matter, or any multiplication of its own cells; but the increase of all, or nearly all, tumours, is "of themselves:" they grow as parts of the body, but by their own inherent force, and depend on the surrounding parts for little more than the supply of blood, from which they may appropriate materials. A tumour, therefore, as a general rule, increases constantly; an inflammatory exudation generally increases only so long as the disease in the adjacent parts continues.

2d. The materials severally produced in excess, in these two cases, have different capacities of development. The inflammatory exudation, in whatever part it lies, has scarcely more than the single capacity to form fibro-cellular or fibrous tissue; the material that begins or is added to a tumour may, indeed, assume either of these forms, but it may assume any one of several other forms.

But, 3rdly, the most striking contrast is in the events subsequent to this first organising of the two materials. The latter course of organised inflammatory exudations, like that of the organised material for repair after injuries, is usually one of constant approximation to a healthy state. As newly formed parts, they gradually assimilate themselves to the shape and purpose, if not to the tissue, of the parts among which they lie; or they are apt to waste, degenerate, and be removed. Their progress is ever towards a better state; so that, in the whole course of exudative inflammatory diseases, some can see nothing but an "effort of nature" to avert or repair some greater evil. It is very different with the class of diseases to which tumours belong: it is in their very nature to proceed to further and further deviation from the proper type of the body. The structure of tumours may, indeed, be like that of some of the natural parts; it may be identical with that of the part in which they lie: in this they may be homologous; but, considered in their life, they are not so; for, commonly, they are growing, while the tissues far and near around them are only maintaining their integrity, or are even degenerating, or yielding themselves to the abnormal growth.

I think that it is only in the consideration of this activity and partial independence of the life of tumours, and of the diseases allied to them, that we shall ever discern their true nature. We too much limit the grounds of pathology when, examining a tumour after removal, we only now compare it with the natural tissues. The knowledge of all its present properties may leave us ignorant of the property which it alone, of all the components of the body, had some time ago,—the property of growing. And so, if we can ever attain the knowledge of the origin of a tumour, it may avail little, unless it supply also the explanation of its progress. If, for example, what is very improbable could be proved—namely, that tumours have their origin in the organisation of extravasated blood, or of inflammatory exudation, still this greater problem would remain unsolved:—How or why is it, that, in ordinary cases, these materials, when organised, gradually decrease, and assimilate themselves to the adjacent parts; while, in the assumed formation of tumours, they gradually increase, and pursue, in many cases, a peculiar method of development and growth? Why is it that, assuming even a similarity of origin, the new-formed

part manifests, in the one class of cases, a continuous tendency towards conformity with the type of the body—in the other, a continuous deviation from it in shape and volume, if not in texture? How is it that, to take an extreme case, we can ever find, as in a specimen at St. George's Hospital, fatty tumours of considerable size in the mesentery of a patient from whom, in the extremest emaciation of phthisis, nearly all the natural fat was removed.

I do not pretend to answer these questions; but I think that in them is the touchstone by which we may tell the value of a pathology of this great class of diseases. It is not in the likeness or in the unlikeness to the natural tissues that we can express the true nature of tumours: as dead masses, or as growths achieved, they may be called like or unlike the rest of a part; but, as things growing, they are all unlike it. It is, therefore, not enough to think of them as hypertrophies or overgrowths: they must be considered as parts overgrowing, and as overgrowing with appearance of inherent power, irrespective of the growing or maintenance of the rest of the body, discordant from its normal type, and with no seeming purpose.

To all this, I know, it may be objected that tumours, and other like growths, may cease to grow, or grow unequally, and yet are tumours still. But this is only in appearance opposed to what I have said, which is no more than that the best or only period, in which we may discern the true difference of these from other growths, is the period of their active increase. As we can have no complete idea of any living thing, unless it include the recognition of its origin, and of its passage through certain phases of development and growth; so must our thoughts of these abnormities be imperfect or untrue, unless we have regard to their development, and growth, and maintenance, as independent parts. But, indeed, the cessation of growth in tumours and the allied diseases often affords evidences of their peculiar nature, confirmatory of that deduced from their increase. Such cessation may occur when they have attained a certain regular size; as in the painful subcutaneous tumours, the osseous tumours on the phalanges of great toes, and some others, which, perhaps always, cease to grow when they have reached a limit of dimensions, that appears as natural and constant for them as the average stature is for the individuals of any species. Or, the cessation of growth may occur when the tumour degenerates or wastes; as when a fibrous tumour calcifies, or when a mammary gland tumour is absorbed. But it is to be observed that these events are, or may be, as irrespective of the nutrition of all the rest of the body as the development and growth of the tumour were; and that, except in the comparatively rare event of the absorption of a tumour, there is in no case an indication of return to the normal type or condition of the body: there is no improvement, as in the organised exudations of the inflammatory process, no adaptation to purpose, no assumption of a more natural shape. In all these events, therefore, as well as in their growth, the nearly independent nature of the tumour is shown: while forming part of the body, and borrowing from it the apparatus and the materials necessary to its life, the tumour grows, or maintains itself, or degenerates, according to peculiar laws.

The characters of which I have been speaking belong to a larger number of abnormities than are usually called tumours; they belong, indeed, to a large class, of which tumours form one part or section; and another part is composed of certain morbid enlargements of organs by what is regarded as merely hypertrophy, such as that of the prostate, the thyroid gland, and others. Now, the distinction between these two divisions of the class must, I believe, be an arbitrary one; for the two are so little unlike, that, really, it is in these hypertrophies of glands that we may hope to find the truest guidance to an insight into the nature of tumours.

In speaking of cysts from the walls of which vascular growths may spring and fill their cavities, I shall have to describe that these intracystic growths are, in their best state, close imitations of the gland in which they occur. In relation to tumours, the most instructive examples of this fact are in the cystic tumours of the breast, of which the general structure has been illustrated by Dr. Hodgkin and Sir B. C. Brodie, and the microscopic character by M. Lebert and Mr. Birkett. Among these, a series of diagrams, from specimens in the Museum, may illustrate the transition from the simple cyst to the cyst so filled with gland-substance as to form a solid tumour,—the chronic mammary, or mammary glandular tumour.

Now a near parallel with the history of these mammary tumours is presented by the observations of Frerichs and Rokitansky on the intra-cystic growths which occur within the substance of enlarged thyroid glands,—*i. e.*, of increasing bronchoceles. In these, masses of new-formed thyroid gland-tissue are found imbedded, and inclosed in fibro-cellular coverings or capsules, within the proper, though increased, substance of the gland. In like manner, as Rokitansky has shown, it is not unusual, in enlargements of the prostate gland, to find distinct masses of new structure imitating that of the prostate, which lie imbedded and incapsuled in the proper substance of the gland. Moreover (and here is a closer contact between these hypertrophies and tumours), these growths of new gland-tissue may appear not only in the substance of the enlarging thyroid and prostate glands, but external to and detached from the glands. Such outlying masses of thyroid gland are not rare near bronchoceles; lying like the little spleens one often sees near the larger mass. Near the enlarged prostate, similar detached outlying masses of new substance, like tumours in their shape and relations, and like prostate gland in tissue, may be sometimes found. I have here a very large and remarkable specimen of the kind, sent to me by Mr. Wyman. It was taken from a man, 64 years old, who, for the last four years of his life, was unable to pass his urine without the help of the catheter. He died with bronchitis; and a tumour, measuring 2¼ inches by 1½, was found, as Mr. Wyman described it, "lying loose in the bladder, only connected to it by a pedicle, moving on this like a hinge, and, when pressed forwards, obstructing the orifice of the urethra." Now, both in general aspect and in microscopic structure, this tumour is so like a portion of enlarged prostate gland, that I know no character by which to distinguish them.

The relation of these new-formed isolated portions of the thyroid or prostate gland is so intimate, on the one side, to admitted tumours,—such as the chronic mammary,—and, on the other side, to the general hypertrophies of the glands, that we cannot dissociate these diseases without great violence to nature. Clearly these are all essentially the same kind of disease: yet, to call them all "tumours" would be to do as much violence to the conventional use of terms which have become not merely the expressions, but the guides of our thoughts. The best course seems to be to make an arbitrary division of this group. In accordance, then, with the arbitration of custom, we may assign the name of tumours to such examples of these morbid growths or growing parts, as, 1st, are isolated from the surrounding parts by distinct investing layers of tissue; or, 2dly, are continuous with the natural parts, but are abruptly circumscribed in the greater part of their extent; or, 3dly, are formed of new materials infiltrated and growing in the interstices of natural parts.

Division of tumours into innocent and malignant.—Characters of malignant tumours; (a) *assumed heterology of texture;* (b) *infiltration;* (c) *proneness to ulceration;* (d) *peculiarities of the ulcer;* (e) *multiplication and reproduction;* (f) *indifference to locality.*—If the group of what are to be called tumours may be thus inclosed, we may next proceed to divide it into smaller parts. And, first, it seems proper to divide tumours according as they may be named, *innocent* or *malignant*. I would employ these terms still, because, though not free from objections, they imply a more natural and a less untrue division than any yet invented to replace them. The distinction between innocent and malignant tumours is probably one not of mere visible structure, but of origin and of vital properties; it is, therefore, less falsely expressed by terms implying quality of nature, than by such as refer to structure alone.

I shall not be able in these lectures to describe malignant tumours. It may suffice, for the present, to illustrate those characters which may be generally deemed distinctive of malignancy; while their absence, or the existence of their opposites, may be counted among the general characters of the innocent tumours which I propose more fully to describe.

And, first, the intimate structure of *malignant tumours* is, usually, not like that of any of the fully developed natural parts of the body, nor like that which is formed in a natural process of repair or degeneration.

Many of the cells of cancers, for example, may be somewhat like gland-cells, or like epithelium cells; yet a practised eye would easily distinguish them, even singly. And much more plainly their grouping distinguishes them; they are

heaped together disorderly, and seldom have any lobular or laminar arrangement, such as exists in the natural glands and epithelia, or in the innocent glandular or epithelial or epidermal tumours. These innocent tumours are really imitations, so far as their structure is concerned, of the natural parts; and the existence of such imitations makes the diversity—the heterology, as it is called—of the malignant tumours appear more evident.

Still, this rule of dissimilarity of structure in malignant tumours is only general. The other properties of malignancy may be sometimes observed in tumours that have, apparently, the same structure as those that are generally innocent. I shall have to refer to cases of fibrous tumours, which, in every respect of structure, were like fibrous tumours of the uterus, and yet returned after removal, and ulcerated, with infection of adjacent parts, and appeared in internal organs. These, with some others, must be regarded as malignant, though in structure resembling innocent tumours and natural tissues. On the other hand, there are some innocent cartilaginous tumours with structures that do not exist in any of our natural tissues. The two sets of cases, though both be exceptional, supply sufficient grounds for not preferring such terms as "homologous" and "heterologous" before "innocent" and "malignant," if they are meant, as they commonly are, to apply to the structure of the several growths.

2d. Malignant growths may have the character of infiltrations,—*i. e.*, their elementary structures may be inserted, infiltrated, or diffused in the interspaces and cavities of the tissues in which they lie. Thus, in its early state, a malignant tumour may comprise, with its own proper elements, those of the tissue or organ in which it is formed; and it is only in its later life that the elements of the tissue or organ disappear from it, gradually degenerating and being absorbed, or possibly yielding themselves as materials for its growth.

Thus a hard cancer of the mammary gland includes in its mass a part, or even the whole, of the gland itself, as if there were only a conversion of the gland-tissue: and one may find within the very substance of the cancer the remains of the lactiferous tubes involved in it, and with the microscope, may trace in it the fibro-cellular tissue that separated the gland lobes, and the degenerate elements of the epithelial contents of the tubes and acini. But among all these lie the proper cells of the cancerous growth, and these usually increase while the original structures of the gland decrease. So, too, in medullary cancerous disease of the uterus, the uterus itself, or part of it, is in the tumour, and gradually wastes while the medullary matter diffused or infiltrated in it is growing.

The malignant growths may, I say, thus appear as infiltrations; but they are not always so. Thus, though the hard cancer of the breast is commonly or always, an infiltration of cancerous substance in and among the proper structures of the gland; yet the hard cancer of the bones is usually a distinct tumour, such as has no mixture of bone in it, but may be enucleated from the cavity or shell of bone in which it lies. So, too, while the medullary cancer of the uterus plainly consists in an infiltration or insertion of new material in the substance of the organ, that of the breast is usually a separate tumour, and altogether discontinuous from the surrounding parts.

Many other instances of similar contrast may be cited; still the fact that their elementary structures may be thus infiltrated in the tissues they affect is a characteristic feature of malignant tumours. I think it is never imitated in cases of innocent tumours.

3d. It is, also, generally characteristic of malignant tumours that they have a peculiar tendency to ulcerate, their ulceration being commonly preceded by softening. One can, indeed, in this particular, only observe a graduated difference between the innocent and the malignant diseases; for certain innocent tumours, if they grow very rapidly, are apt very rapidly to decay; and then may suppurate and discharge their pus and débris with foul and dangerous ulceration. Thus the quickly-growing cartilaginous tumours may imitate, in these respects, malignant growths; so may large fibrous tumours when they soften and decay. Or, again, when an innocent tumour grows more rapidly than the parts over it can yield, they may waste and ulcerate, and allow it to protrude; and it may itself ulcerate and look very like malignant disease. This may be seen in the protruding fibrous tumours that ulcerate and bleed; or, in a more striking manner, in the protruding

vascular growths that have sprung up in the cystic tumours of the breast. Or, once more, the characters of readiness to ulcerate may be imitated by innocent tumours, after injuries, or in exposure to continued irritation; for they resist these things with less force than the similar natural parts do. Hence, sloughing and ulcerating fibrous, erectile, and other tumours, have been often thought cancerous, and so described.

4th. The softening that often precedes the ulceration of malignant growths can hardly be considered separately from the minute account of their structure. I therefore pass it by, and proceed to their fourth distinctive character, which is to be noticed in the modes of their ulceration.

This is, that the ulcer, which forms in, or succeeds, a malignant growth, has no apparent disposition to heal; but a morbid substance, like that of which the original growth was composed, forms the walls or boundaries of the ulcer; and as this substance passed through the same process of ulceration which the primary growth passed through, so the malignant ulcer spreads and makes its way through tissues of all kinds.

5th. Malignant tumours are, again, characterised by this,—that they not only enlarge, but apparently multiply or propagate themselves; so that, after one has existed for some time, or has been extirpated, others like it grow either in widening circles round its seat, or in parts more remote.

Mere multiplicity is not a distinctive character of malignant diseases; for many innocent tumours may be found in the same person. But in the conditions and circumstances of the multiplicity there are characteristic differences. Thus, when many innocent tumours exist in the same person, they are, commonly, or always, all in one tissue. Thus a man may have a hundred fatty tumours, but they shall all be in his subcutaneous fat: many fibrous tumours may exist in the same uterus, but it is so rare, that we may call it chance, if one be found in any other part in the same patient: so, many cartilaginous tumours may be in the bones of the hands and feet, but to these or to these and the adjacent bones, they are limited.

There is no such limitation in the cases of multiplicity of malignant tumours. They tend especially to affect the lymphatics connected with the part in which they first arise; but they are not limited to these. The breast, the lymphatics, the skin and muscles, the liver, the lungs, may be all, and at once, the seats of tumours. Indeed (and here is the chief contrast), it is more common to find the many malignant tumours scattered through several organs or tissues than to find them limited to one.

Moreover, if there be a multiplicity of innocent tumours, they have generally had a contemporary origin, and all seem to make (at least for a time) a commensurate progress. But the more ordinary course of malignant tumours is, that one first appears, and then, after a clear interval of progress in it, others appear; and these are followed by others, which, with an accelerating succession, spring up in distant parts.

6th. A sixth distinctive character of malignant tumours is that, in their multiplication, as well as in their progress of ulceration, there is scarcely a tissue or an organ which they may not invade.

In regard to their multiplicity, I have just illustrated their contrast in this point with the innocent tumours; and a similar contrast is as obvious in the characters of the ulcers. It is seldom that a common ulcer extends, without sloughing, from the tissues it has first affected into any other; rather, as a new tissue is approached, it is thickened and indurated, as if to resist the progress of the ulcer. But before a cancerous ulcer the tissues in succession all give way, becoming first infiltrated, and then, layer after layer, degenerating and ulcerating away with the cancerous matter.

One may see this very well in bones. Specimens are to be found in nearly all museums, of tibiæ (for example) on the front surfaces of which new bone is formed, in a circumscribed round or oval layer, a line or two in thickness. This bone, which is compact, hard, smooth, and closely united with the shaft beneath it, was formed under an old ulcer of the integuments of the shin. But, on the other side, specimens are found, which show that when a cancerous ulcer reaches bone, at once the bone clears away before it; and a cavity with abrupt, jagged, eaten-out edges, tells the rapid work of destruction. Neither are specimens rare, showing

the progressive destruction of more various tissues; such as cancer of the scalp making way by ulceration through the pericranium, skull, and dura mater, and then penetrating deeply into the brain; or one in the integuments of the shin going right through the tibia, and deep into the muscles of the calf.

Such are the general characters of malignant tumours. Those of innocent ones are their opposites or negatives. Thus: no innocent tumours have a structure widely different from that of a natural tissue; none appear as infiltrations displacing or overwhelming the original tissues of their seat; none show a natural proneness to ulceration; nor is the ulceration, which may happen in one through injury or disease, prone to extend into the adjacent parts; none appear capable of multiplying or propagating themselves in distant parts; none grow at the same time in many different tissues.

For malignant tumours it is, I think, most probable that they are local manifestations of some morbid state of the blood; that in them are incorporated peculiar morbid materials, which have accumulated in the blood, and which their growth may tend to increase. All their distinctive characters are, I think, consistent with this view; and if the absence of the same characters in innocent tumours may lead us to believe that they are completely local diseases, then we can, perhaps, only speak of them as the result of some inexplicable error of nutrition in the part that they affect, and as being only in the same measure dependent on the state of the blood as are the natural tissues, which require, and may be favoured by, the presence of their appropriate materials of nutrition.

It may be best to speculate no further, either on this point, or on the origin or determining causes of tumours. I could speak certainly of very little connected with these points, unless it were of the error or insufficiency of all the hypotheses concerning them that I have proposed to myself, or have read in the works of others.

Division of tumours generally innocent, into cysts and solid tumours; and of cysts into simple or barren, and compound or proliferous: subordinate groups of each. Division of solid innocent tumours into fatty, fibro-cellular, fibrous, fibroid, or fibro-plastic, cartilaginous, osseous, glandular, and vascular or erectile: subordinate groups of each. General distinctions of tumours and outgrowths.—Narrowing, now, the objects of consideration to the innocent tumours alone, I will speak very briefly of their classification.

A first subdivision of them may be made, according to the usual arrangement, into the cysts or cystic tumours, and the solid tumours. There are, indeed, not a few instances in which the two divisions overlap or are confused. Thus, on the one side, in cases to which I have already referred, a solid growth may spring from the inner walls of a cyst, and enlarging more rapidly than the walls do, may fill the cavity, and come in contact and unite with the walls; and thus may be traced a complete series of gradations from the cystic to the solid tumour. On the other hand, cysts may be formed within solid tumours, and, increasing more rapidly than the solid structure, may reduce it to scarcely more than a congeries of cysts, or to one great cyst. Such changes are illustrated sometimes in fibrous tumours of the uterus; and, I think, also, in the tumours which Sir Astley Cooper called "hydatid disease" of the testicle.

But though there are these instances of confusion, yet the division is very convenient, and is probably deeply and well founded.

Next, among cysts, some are filled with a simple fluid, containing no organised matter, and resembling one or other of the fluids of serous cavities. These may be called simple or barren, or, in most instances, serous cysts.

Other cysts contain organised substances, and may be named, as a group, proliferous; and the several members of the group may be described, according to their contents, as glandular, cutaneous, sebaceous, epithelial, dental, and the like.

Of the solid innocent tumours, no method of arrangement at present appears reasonable but the old one, which is founded on their likeness to the natural tissues. On this ground they may be arranged in eight divisions, with names, as specific names, expressing their several resemblances,—viz., fatty, fibro-cellular, fibrous, fibroid or fibro-plastic, cartilaginous, osseous, glandular, and vascular or erectile. And again, under each of these may be arranged certain varieties, including instances that, in some uniform manner, deviate, without quite departing, from

the usual characters; as the fibro-cystic, fibro-calcareous, and other varieties of the fibrous tumours.

In each assumed species or group of these solid tumours, moreover, we must make a division, according to their modes of growth, and of connexion with the adjacent parts. Some among them are only intermediately connected with the adjacent parts; a layer of tissue at once separates and combines them, and, by division of this layer, such a tumour may be cleanly and alone removed from the surrounding parts; it may be enucleated or shelled-out from them. Thus, with a common fatty tumour, or a fibrous tumour of the uterus, if we cut along one part of its surface, we may, with a blunt instrument, detach the whole mass, by splitting the layer of fibro-cellular tissue which, like a capsule, incloses and isolates it.

These are what we commonly accept as the proper or typical tumours, these which are "discontinuous hypertrophies."

Other growths resemble these in every character, except in that they are connected with the adjacent parts by continuity of similar tissue, and thus appear as growths, not in, but of, the parts. Thus we cannot exactly isolate a polypus of the nose or of the uterus: the overgrown part cannot be enucleated, because the proper tissue of the nasal mucous membrane, or of the uterine wall, is continued into it; the tissue of the growth is here not only uniform, but continuous, with that of the adjacent parts. So, too, with epulis: the gum itself, or the periosteum of the jaw together with the gum, seems, by its own excessive growth, to form the tumour; and in other fibrous tumours on bones, the fibres of the periosteum appear to be in the growth, and to form part of it.

Such growths as these might be named "continuous hypertrophies," or "outgrowths;" and I will, in general, observe this distinction wherever the same tissue is, in different cases, found in both forms of growth; calling the discontinuous masses, tumours,—the continuous ones, outgrowths. Thus, answering to the common fatty tumour, we find the pendulous and continuous fatty outgrowths of the neck or the abdominal walls; answering to the fibro-cellular tumour that grows, as a discontinuous mass, in the scrotum or beneath the labia, we have the cutaneous outgrowths or enlargements of these parts; to the fibrous tumours of the uterus answer the fibrous polypi or continuous outgrowths of its substance. All these instances of clear distinction might lead us to think that a strong definition-line might be drawn to divide the whole class of innocent overgrowths into tumours and outgrowths. But when we come to the tumours of bone and periosteum, and to the erectile tumours, we find the distinctions vanishing, and in many instances no longer possible.—*Medical Gazette, May* 30, 1851, *p.* 925.

[Next comes the consideration of cysts or cystic tumours.]

Simple or barren cysts—Their general characters and varieties—Modes of origin: (a) *by expansion or enlargement of natural spaces or areolæ:* (b) *by dilatation of sacculi or parts of ducts:* (c) *by development and growth of new-formed nuclei or cells. Illustrations of the third mode of origin; in cysts in the kidney. Probable deduction concerning the origin of solid tumours.*—We may conveniently arrange cysts under the titles "simple" or "barren," and "compound" or "proliferous"; the former containing fluid or unorganised matter, the latter containing variously organised bodies.

Among the simple or barren cysts, of which I speak to-day, we find some that contain a fluid like that of one of the serous membranes; such are certain mammary cysts, and those of the choroid plexus: some are full of synovial-like fluid, as the enlarged bursæ: others are full of blood, or of colloid, or some peculiar abnormal fluid: while others, forming the transition between the barren and the proliferous cysts, contain more highly organic secretions, such as milk or mucus, or salivary or seminal fluid. These several forms we may arrange with names appropriate to their contents; as serous, synovial, mucous, sanguineous, colloid, salivary, seminal, and others.

Among the cysts, whether barren or proliferous, it is probable that at least three modes of origin may obtain. 1st. Some are formed by the enlargement and fusion of the spaces or areolæ in fibro-cellular or areolar or other tissues. In these spaces fluids collect and accumulate, the tissue becomes rarefied; and, gradually, the boundaries of the spaces are levelled down and walled-in, till a perfect sac or cyst is formed, the walls of which continue to secrete. Thus are produced the bur-

over the patella, and others; and to this we may refer, at least in some cases, the formation of cysts in tumours, and, perhaps, in other parts.

2ndly. Some cysts are formed by dilatation and growth of natural ducts or sacculi; as are those sebaceous or epidermal cysts which, formed by enlarged hair-follicles, have permanent openings. Such, also, are certain cysts containing milk, that are formed of enlarged portions of lactiferous tubes; such are the ovarian cysts formed by distended and overgrown Graafian vesicles; and such appear to be certain cysts formed of dilated portions of blood-vessels shut off from the main streams.

3dly. Many—and perhaps the great majority of cysts, such as those of the kidney, the choroid plexuses, the chorion, and the thyroid gland—are formed by the enormous growth of new-formed elementary structures having the characters of cells or nuclei, which pursue a morbid course from their origin, or from a very early period of their development.

It might, on some grounds, be desirable to classify the cysts according to their respective modes of formation; separating the "secondary cysts," as those have been called which are derived by growth or expansion of normal parts, from the "primary," or as they might be called the "autogenous" cysts. But at present, I believe, such a division cannot be made; for of some cysts it is impossible to say in which method they originate, and, in some instances, either method may lead to an apparently similar result. Thus, some sebaceous or epidermal cysts are clearly formed of overgrown hair-follicles; others are of distinct autogenous origin. Some ranulæ are probably formed by dilatation of the submaxillary duct, obstructed by calculi or otherwise; others by abnormal development of distinct cysts, or possibly of a bursa between the muscles of the tongue. Some cysts in the mammary gland are certainly dilated portions of ducts; others are, from their origin, anormal transformations of the elementary structures of the gland. But, in each of these cases, it may be impossible, when the cyst is fully formed, to decide what was its mode of origin—whether by growth of parts once normally formed, or by transformation of elementary and rudimental structures.

Of the three modes of formation of cysts to which I have referred, the first two, namely, that which is accomplished by expansion of areolar spaces, and that by dilatation and growth of ducts or vesicles, scarcely needs an explanation.

But for the third method of formation a more detailed account is required; and this I will now endeavour to give.

The general structures of the cysts thus formed may be best studied in those that are so commonly found in the kidneys, or the mammary or thyroid gland, or in any instance of an ordinary serous cyst. Such a cyst, when large enough for naked-eye examination, is usually constructed of fine, well-formed fibro-cellular tissue, of which the filaments are commonly mingled with nuclei, or nucleus-fibres, and are variously interwoven in a single, or in many separate layers. The membranous walls thus formed are, in general, rather firmly connected with the adjacent parts, so that the cyst cannot easily be removed entire; and from these parts they derive the blood-vessels that usually ramify copiously upon them. They are usually, also, lined with epithelium, which, so far as I know, is always of the tesselated form, and may consist, according to Rokitansky, of either nuclei or nucleated cells.

I am not aware that minute examinations have been made of the modes of earliest formation of any of the cysts of this kind, that are common subjects of surgical consideration; but there can be little doubt that, in their formation, they resemble the cysts of the kidney and other internal organs. In these organs the origin and progress of cysts have been profoundly studied by Rokitansky; and I shall best describe them by giving an abstract of some of the observations which he has recently published. They confirm and greatly extend the results obtained by the similar investigations of Frerichs, and they fully establish the accuracy of the observations on the cystic degeneration of the kidney which were made by Mr. Simon, to whom pathology is indebted for the first sure step in this rich path of inquiry. They may be repeated in almost any portion of a granular kidney containing cysts, or in a choroid plexus with cysts; but, I believe, the process may be best traced in the cystic disease of the embryonic chorion—the hydatid mole, as it has been called.

In a portion of such a granular and cystic kidney, nests, as Rokitansky calls them, of delicate vesicles, from a size just visible to that of a millet-seed, may be seen imbedded in a reddish grey or whitish substance. These differ in size alone from the larger cysts to which one's attention would be sooner attracted; and, on the other side, it is simply in size that they differ from many much smaller. For if a portion of such a nest be examined with the microscope, one finds, together with the débris of the kidney, variously diseased it may be, a vast number of vesicles or cysts that were invisible to the naked eye. The most striking of these have a wall consisting of layers of fibres scattered over with curved nuclei, and are filled with granulated nuclei, or more rarely, with round or polyhedral cells, some of which may contain a molecular or granular pigmental matter. In many of these cysts, the nuclei or cells are reduced to an epithelial lining of the cyst; and in some even this is absent, and the barren cyst is filled with a clear or opaline adhesive fluid.

From the size just visible to the naked eye, such cysts vary down to 1-500 of an inch in diameter; and, together with these, are cysts whose walls (though their contents are like those of the others) consist of a structureless hyaline membrane: and these lie in a stroma which is equally simple, but seems to develope itself gradually into a fibrous structure circumscribing the cysts.

Moreover, one finds, in the same specimens, structures of the most various sizes, which, except in size, agree completely with the last mentioned structureless vesicles, and show every grade of size down to that which is just larger than a nucleus. The smallest of these contain a clear fluid, or are slightly granulated: in the larger there is a central nucleus, and to this are added a second, a third, and a fourth nucleus, and so on till there appear several which fill up the commensurately enlarged vesicle. Now in such a nucleus seems to lie the nucleus of the history of development of these autogenous cysts, not in the kidney alone, but in any part in which they may occur. A nucleus grows to be a cyst, whether a simple or barren one, or one that has an endogenous production of nuclei, or cells, or any other structures. And perhaps, in the same specimen, the earlier history of the nucleus itself may be traced; for one sees, together with the nuclei, still smaller corpuscles of all sizes, down to that of the elementary granule, so-called, and these, the larger they grow, the more are they like nuclei; so that, perhaps, the progress of the disease is from these granules, enlarging to the formation of nuclei, and thence pursuing some abnormal course.

It would be tedious now to trace, from this general sketch of their origin, all the phases through which such cysts may pass. Rokitansky has done it amply. We have here the elementary constituents. But the simple cyst-wall is capable, not only of growing, but of acquiring, by appropriation and development of surrounding blastema, the laminar and nucleated fibrous tissue, which we find in its full estate; acquiring these we may presume just as, more normally, the simple membranous wall of a new blood-vessel acquires, as it grows, the nuclei and fibrous tissue that belong to its more perfect state. Such might be the least abnormal course of any cyst: but from this it may deviate; thickening, acquiring continually new layers, calcifying, and in other ways showing the signs of degeneration or disease. The contents also of the cyst may assume even yet more various forms: to name only the extremes—they may retain the simple state of liquid; or with liquid there may be a simple, or a specially secreting, epithelial layer; or the contents may acquire the structure of well-organised glands, or cancer, or some other tissue, and between these extremes, according to conditions which we have no power to trace or explain, they may pass in any of the manifold ways of wrong, the ends of which I shall have to describe.

Important as the history of cysts may be in its direct bearings, yet these are not all that we may observe in it. In their history I cannot but think we may discern an image of the first form and early progress of many innocent solid tumours also. For, as the cyst is traced from the mere nucleus, or even from the granule, onwards to its extreme size or complexity of structure or contents, so, it is very probable, from the numerous correspondences between them, that these solid tumours also have a similar beginning in some detached element, or tissue-germ, or in some group of such germs, which, in their development and growth, may coalesce, and then may appropriate, or exclude for absorption, the intervening substance.

Thus, in the form of erring nuclei, we may, I think, almost comprehend the structural origin of these cysts and tumours: yet, if we may, the question still remains whether the elementary structures in which they begin be some new and special morbid elements, or some natural rudimental structures perverted from their normal course. Rokitansky, in his explanation of the cyst-formation, implies that the cyst is derived from a new element. Mr. Simon, speaking of the cysts of the kidney, regards them as "vesicular transformations of the ultimate structure of the gland"; and to this view, without adopting some ingenious suppositions which he has connected with it, I would adhere. For, unless a cyst or a solid tumour (assuming this mode of their origin to be correct) were really a transformation of a nucleus, or a cell, of the part in which it grows, we could not understand the very general similarity that we find, between the contents of certain cysts and the secretions or structures of the glands in or near which they occur; nor yet the likeness which commonly exists between the solid tumour and the tissue in which it is imbedded. These things are as if the first beginning of the abnormal growth were in some detached element of the natural tissue, which element, being perverted from its normal course, thenceforward multiplies and grows, conforming, in nearly all cases, with the type, in minute structure and composition, but more and more widely deviating from it in shape and size.

Such are the facts, and such the speculations that we may entertain respecting the origin, or, at least, the smallest visible beginning, of a cyst or an innocent solid tumour. Need I add that if even this be true, we are yet far from the explanation of the cardinal point in the pathology of tumours—their continual growing. Why should these detached tissue-germs, or any less minute and less isolated portion of an organ, grow while all other germs and parts that are most like them remain unchanged? I have already confessed my ignorance.

[The particular forms of the simple or barren cysts are now illustrated. Of the first class of *gaseous cysts*, little need be said; these scarcely deserve notice.]

Varieties of barren cysts:—Gaseous: Serous: in the neck, breast, gums, &c.: Synovial: Mucous: Nabothian, Cowperian, &c.: Sanguineous: Oleaginous: Colloid: Seminal.—The *Serous Cysts* are, of all the order, the most abundant. Their most frequent seats are, by a hundred-fold majority, in or near the secreting glands or membranes, or the so-called vascular glands; but there is scarcely a part in which they may not be found. Their frequency in connexion with secreting structures has led some to hold that they are all examples of perverted epithelial or gland-cells; but their occurrence in such parts as bones and nerves, among deep-seated muscles, and in fibrous tumours, makes it sure that they may originate independently of gland-cells; though why any element of a solid tissue should retain the vesicular form which it has in its germ-state, and in that form grow, we cannot tell.

Of this numerous group of serous cysts, however, I will speak at present of only such as may best illustrate their general pathology, and are of most importance in surgical practice; and I will, to these ends, refer chiefly to the cysts in the neck and in the mammary gland.

Single serous cysts in the neck form what have been called "hydroceles of the neck," and are well exemplified by a specimen in the museum. This is a single oval cyst, with thin, flaccid, membranous walls, and even now, after shrinking, measures more than six inches in its chief diameter. It was successfully removed by Mr. Thomas Blizard from between the platysma and sterno-mastoid muscles; and a part of it is said to have passed behind the clavicle. It was filled with a clear brownish fluid.

Such cysts, but various in size and other characters, are more apt to occur in the neck than in any other part of the body.

Some of these cysts in the neck appear to be transformations of vascular tumours —*i. e.*, of erectile vascular growths or nævi. I shall refer to this point again; it is made probable by the close connexion which some of these cysts have with large, deep-seated veins; by the occasional opening of blood-vessels into their cavities; and by their sometimes distinctly forming portions of vascular nævi. Thus, a child, three and a half years old, was under Mr. Lawrence's care two years ago, in St. Bartholomew's Hospital, with a tumour covering the greater part of the left side of the neck, and the lower part of the cheek. Such a swelling had existed from birth,

but it had of late enlarged very much. It was composed of a cluster of close-set cysts, containing coagulable fluid; but at its upper part a firmer portion of its mass consisted of a collection of tortuous and dilated blood-vessels, like those of a nævus. The examination made of it, by Mr. Coote, after its removal, was such as to leave little doubt in his mind that it had origin in or with a nævous growth; and other cases, to which I shall refer, in speaking of erectile tumours, have confirmed this view, especially some of those which are published by Mr. Hawkins.

But when we have separated all the serous cysts in the neck that may be referred to these two sources, there will probably still remain many that we can assign to no such mode of origin, and which at present we must class among primary or autogenous cysts, independent of any secreting structure. .

Among these are some with fluid contents of peculiar viscidity—ropy, or honey-like, and deriving a peculiar aspect from including abundant crystals of cholestearine. Such contents may occur, perhaps, in any cyst in the neck or elsewhere; but they appear to be comparatively frequent at or near the front of the larynx. Here is such a cyst, attached to the hyoid bone of a sailor, between fifty and sixty years old, in whom it had existed nearly as long as he could remember. It contained a brownish-yellow, grumous, honey-like fluid, with abundant crystals of cholestearine.

Last year Mr. Lawrence had, at St. Bartholomew's Hospital, a patient, thirty-five years old, on the left side of whose neck, directly over and closely attached to the thyro-hyoid membrane, was a smooth oval tumour, about an inch in length. He had observed a regular increase of this tumour for five or six years; but its bulk and deformity alone were inconvenient. Mr. Lawrence freely cut into it, and let out a thick honey-like fluid, in which large groups of crystals of cholestearine were visible even with the naked eye. The cyst, after the incision, suppurated, and then the wound healed, and the patient left the hospital quite well.

I may add that such cysts as these are not uncommon near the gums, lying usually beneath the reflection of the mucous membrane from the gum to the cheek. Their occasional large size, and their thick walls obscuring the sense of fluctuation, may make them at first look formidable. A woman, thirty-eight years old, was under my care last September, in whom, at first sight, I could not but suppose something was distending the antrum, so closely was the deformity of the face due to such diseases imitated. But the swelling was soft and elastic, and projected the thin mucous membrane of the gum of the upper jaw, like a half-empty sac. I cut into the sac, and let out nearly an ounce of turbid brownish fluid, sparkling with crystals of cholestearine. The posterior wall of the cyst rested in a deep excavation on the surface of the alveolar border of the upper jaw,—an adaptation of shape attained, I suppose, as the result of the long-continued pressure of the cyst, which had existed six years.

At nearly the same time a young man was under my care with a similar swelling of larger size, which he ascribed to an injury of the gum or alveolar border of the upper jaw only six months previously. In neither of the cases could I find any disease of the maxillary bone; but I believe it sometimes exists in intimate connexion with these cysts.

In no organ is the formation of cysts more important than in the mammary gland. Every variety of them may be found here: but I will speak at present of only the serous cysts.

Some of these cysts are dilated ducts, or portions of ducts grown into the cyst-form. During lactation, cysts thus derived may be filled with milk, and may attain an enormous size, so as to hold, for example, a pint or more of milk. In other cases they may contain the remains of milk, as fatty matter, epithelial scales, &c.; or they may be filled with transparent watery fluid, without coagulable matter; but much more commonly they contain serous fluid, pure, or variously tinged with blood or its altered colouring matter, or with various green, or brown, or nearly black fluid.

The complete proof of the origin of some of these cysts as dilated portions of ducts, is, that by pressure they may be emptied through the nipple, or that bristles may be passed into them from the orifices of the tubes. But although these facts may be often observed, yet I agree with Mr. Birkett in thinking that the majority of cysts in the mammary gland are formed in the manner of the renal cysts, to which, indeed, they present many points of resemblance.

The most notable instances of mammary cysts are those in which the whole of the gland is found beset with them. This may occur while the proper substance of the gland appears quite healthy; but I think it is more commonly concurrent with a contracted and partially indurated state of the gland,—a state which, independent of the cysts, appears similar to cirrhosis of the liver; and has, I think, been named cirrhosis of the mammary gland. Its coincidence with cysts proves its nearer relation to that shrivelled and contracted state of the granular kidney with which the renal cysts are so commonly connected; or, perhaps, more nearly to the shrivelled, indurated state of the lungs that may coincide with dilatation of the bronchi.

The cysts in these cases are usually of small size, thin-walled, full of yellow, brown, green, and variously deep-coloured fluids,—fluids that are usually turbid, various in tinge and density, but not usually much denser than serum. They do not lie in groups, but are scattered through, it may be, the whole extent of the gland. Similar small cysts are sometimes found in connexion with hard cancer of the breast; and in this case they have been called by Mr. Hunter and others "cancerous hydatids:" but their proper relation in such cases appears to be, not with the cancer, but with the coincidently shrivelled gland.

In this disease of the mammary gland there is no reason to believe it to be of a malignant nature, though the coincidence with cancer appears not rare. Yet the diagnosis between it and cancer is not always clear.

The single cysts of the mammary gland may become enormous. I know not what boundary may be set to their possible size; but I find one case in which nine pounds of limpid "serosity" were produced in three months, in the breast of a woman thirty years old. In this case the walls of the cyst were thin, and the fluid serous; and the fact illustrates a general rule, that the cysts which contain the simplest fluids, and which have the simplest walls, are apt to grow to the largest size; thickenings of cyst walls, and, much more, their calcification, are here, as elsewhere, signs of degeneracy, and of loss of productive power.

It would appear as if any cyst of the mammary gland might, after some time of existence in the barren state, become prolific, and bear on its inner surface growths of glandular or other tissue.

[As to the *Synovial Cysts*—under this head may be included all the abnormal bursæ, or, as they are called, ganglions. These seem to be merely enlargements, with various transformations, of the bursæ naturally existing; and of a similar character are bursæ forming anew in parts subject to occasional pressure.]

Under the name of *Mucous Cysts* we may include all such as are formed in connexion with simple mucous membranes, or with glandular structures which we call mucous, while we know no other or peculiar office served by their secretions.

There may be many cysts of this kind; but the best examples appear to be those that may be named *Nabothian* and *Cowperian* cysts. The former probably originate in cystic degeneration of the glands of the mucous membrane about the cervix uteri. Protruding, either alone, or with polypoid outgrowths of the mucous membrane, they are observed successively enlarging, then bursting and discharging their mucous contents, and then replaced by others following the same morbid course. Or, instead of clusters of such cysts, one alone of larger size and simpler structure may be found.

The Cowperian cysts appear to be connected with the Cowper's or Duvernoy's glands in the female. Whether arising from dilatation of the duct, or from cystic transformation of the elementary structures of the gland, cannot be yet stated; but in the exact position of the Cowper's gland, and projecting into the vagina nearer its orifice, a cyst is often found, of regular oval shape, thin-walled, of uncertain size, but growing sometimes to the capacity of a pint. Commonly the contents of such a cyst are a colourless, pellucid, or opaline ropy fluid, like that found in the closed-up gall bladder. But from this they often vary. I have seen the contents of such cysts like the ink of the cuttle-fish, like the fluid of melanotic tumours, and like thick turbid coffee; or, to the sight, they may exactly resemble fluid fæcal matter. Moreover, these cysts are very apt to inflame and suppurate. Many abscesses projecting into the vagina have in these their origin; and the treat-

ment these abscesses receive by free incision, is, I believe, appropriate for the cysts under all conditions.

The Sanguineous Cysts, or cysts containing blood, are, probably, in many instances, very nearly related to the serous. Some may be explained by an accidental hemorrhage into the cavity of a serous cyst; an event corresponding with the transformation of a common hydrocele into an hæmatocele. The contents of some of these cysts are, indeed, just like those of an hæmatocele; with fluid, and coagulated, and variously decolorized blood. But some cysts appear, from their origin, to contain blood; and this blood, I think, always remains fluid till it is let out, while that which collects by hemorrhage into a serous cyst is generally partially or wholly coagulated. Some of these cysts with blood are found in the same positions and circumstances as the serous. Thus, in the neck, a series of cases of blood-cysts might be collected, exactly corresponding with the serous cysts in that part, and, like them, probably derived from various origins, some lying in the thyroid gland, some near it, some traceable to connexion with vascular nævi, some of proper origin.

Cysts containing *oil* or fatty matter, without any more highly organized substance, are very rare. Many contain fatty matters mingled with serous, epithelial, and other substances; but in these the fatty constituent is probably the result of the degeneration of the other contents. Some, however, appear to contain fatty matter alone. Mr. Hunter preserved a specimen of what he marked as "oil from an adipose encysted tumour." It was taken, I believe, from a cyst that grew "between the bony orbit and the upper eyelid" of a young gentleman. When recent, it was described as "pure oil, perfectly clear and sweet, which burnt with a very clear light, and did not mix with aqueous fluids, and, when exposed to cold, became as solid as the human fat."

Lately Mr. Wormald removed a small cyst from a woman's breast, the contents of which appeared to be pure oily matter, that congealed into a substance like lard, and contained crystals of margarine, but no organised corpuscles.

Colloid Cysts are at present a very ill-defined group; the term "colloid" being used by Frerichs, and other recent German writers, for all those morbid materials that are pellucid, jelly-like, flickering, half-solid, or more or less closely resembling the material found in gelatiniform, alveolar, or colloid cancer. Such a material is common in the cysts of bronchoceles, and in those of the kidneys, especially, I think, in those which are not associated with contraction of the renal substance, and which Baillie, and other writers of his time, described as hydatid disease of the kidney.

The contents of these cysts may present the most diverse conditions; may be of all densities, from that of dilute serum to that of a firm jelly; may range between pellucidity and the thickest turbidness; may be of all hues of yellow, olive-green, orange, brown, pink, and nearly black. The thick and pellucid contents of such renal cysts are enumerated as examples of colloid matter—so are the contents of ranulæ, and of many bursæ; but the type is the material of the so-called colloid cancer. This, however, is beyond the range of the present course of lectures; and I shall pass by it, referring to the already cited works of Frerichs and Rokitansky, and to that of Bruch, for the best information yet supplied.

The last group of cysts of which I shall now speak includes such as contain secreted fluids, like those of the glands, by the dilated ducts or transformed elements of which they are formed. Such are the cysts in the breast that contain milk, and probably many instances of ranula. The origin of the former is, probably, in dilatation of lactiferous ducts; that of the latter is uncertain. But the examples of this group, of which I wish more particularly to speak, are the seminal cysts, including under this name those that are usually called encysted hydroceles, or hydroceles of the spermatic cord. Their various forms are fully described by Mr. Curling, and are well illustrated by specimens in the Museum of the College. They are usually thin-walled spherical or oval cysts, imbedded in, and loosely connected with, the tissue of the cord. Their most frequent seat is just above the epidydimis, but they may be found in any part of the spermatic cord. Their walls are formed of fibro-cellular tissue, and may be lined with delicate tesselated epithelium. Their contents are usually a colourless slightly opaline fluid, like water with which a little fluid has been mingled.—*Medical Gazette, June* 6, 1851, *p.* 988.

[Having traced and illustrated the formation of simple and barren cysts—the highest of which seem to be those which secrete a seminal fluid, and those which

are lined by a complete secreting epithelium—Mr. Paget now proposes to describe the cysts which produce more highly organized, and even vascular, structures; or, as they may be termed generally, *proliferous cysts.*]

Compound or proliferous cysts—Distinction from clustered cysts—Modes of origin. 1. *Cysts, having cysts developed in or upon their walls; exemplified in the proliferous ovarian cysts, and the cystic disease of the chorion.* 2. *Cysts, having glandular or other vascular growths springing from their walls; as exemplified in the "serocystic sarcomata" of the breast, the lip, and other parts.* 3. *Cysts, with cancerous growths from their walls.* 4. *Cutaneous cysts, in the ovary, brow, &c.*— Of the first formation of cysts that may be proliferous I need not speak; for, as far as is at present known, they may be formed exactly as the barren cysts are. A cyst may be proliferous in whichever of the plans described in the last lecture it may have had its origin. Thus, 1, bursæ, formed by expansion and rarefying of areolar spaces, may be found with organised, pendulous, or loose growths from their walls. 2. Among the cysts formed by growth of natural cavities or obstructed ducts, we have instances of surpassing proliferous power in the ovarian cysts from Graafian vesicles, and of less power in some cases of dilated lactiferous tubes and dilated veins. And 3. Among the autogenous cysts we find, in the breast and other glands, some of the principal examples from which the following history of proliferous cysts will be derived.

The account given in the last lecture of the modes of origin of barren cysts may therefore, so far as the cyst is concerned, suffice for the proliferous; and I shall now need to speak of only the intra-cystic productions, the differences of which may decide the grouping of the whole division of proliferous cysts.

1. The first group includes the cysts which have others growing in or upon their walls. Of these, two chief examples are presented, in the complex ovarian cysts, and in the cystic disease of the chorion or "hydatid mole."

The principal varieties of the complex ovarian cysts have been described to the very life by Dr. Hodgkin, to whom we are indebted for the first knowledge of their true pathology. But, since his minute description of them is or should be well known, I will more briefly say that, according to his arrangement, we may find in these proliferous ovarian cysts two principal or extreme forms of endogenous cysts; namely, those that are broad-based and spheroidal, imitating more or less the characters of the parent cyst, and those that are slender, pedunculated, clustered, and thin-walled. Between these forms, indeed, many transitional and many mixed forms may be found; yet it is convenient to distinguish the two extremes.

The general characters of this disease constituting the hydatid mole, are well known. A part, or even the whole, of the chorion is covered with pellucid vesicle, with limpid contents, borne on long, slender, and often branching pedicles. The cysts are usually oval or pyriform; their walls are clear, or have minute opaque dots; they may either be simple or may bear others projecting from their walls.

Dr. Mettenheimer has found that the minute dots besetting these cysts are villous processes, exactly resembling those of the natural chorion, and growing from the walls of the cysts, either outwardly or into their cavities. In these villi he traced the development of cysts. In their natural state, they may be described as filiform or clavate processes, often branching and bearing bud-like projections, and composed of dimly-granular substance, in which are imbedded minute nucleated cells. In this cystic disease, vesicular bodies may be seen scattered among the cells in the villi, which bodies are distinguished from the cells by their pellucidity, their larger size, and double contours; but, from the cells to these, every gradation may be so traced as to leave scarcely a doubt that the vesicles are derived from cells deviating from their normal character. Thus in some of the cells the contents are seen lighter and less granular; in some they have entirely disappeared, without increase of size; and then, when their contents are thus become uniformly pellucid, and they have acquired the character of vesicles, the cells appear to grow while their walls become stronger, and they acquire such a size that they are recognised as very small cysts, similar in all but their size, to those which are visible to the naked eye.

Now, though this formation of cysts has been traced by Mettenheimer only in the villi which grow on the cysts themselves, and therefore, so to speak, only in the production of the cysts of the second and later generations, yet there can be little

doubt that the first cysts in the diseased chorion are formed in its own villi after the same manner. For the villi borne on the cysts are, in all essential characters, like those natural to the chorion; and the cysts of all generations are equally alike. The whole process may, therefore, be probably thus described:—Certain of the cells in the proper villi of the chorion, deviating from their cell-form, and increasing disproportionately in size, form cysts, which remain connected by the gradually elongated and hypertrophied tissues of the villi. "On the outer surface of the new-formed cysts, each of which would, as it were, repeat the chorion and surpass its powers, a new vegetation of villi sprouts out, of the same structure as the proper villi of the chorion. In these begins again a similar development of cysts; and so on, *ad infinitum*." Each cyst, as it enlarges, seems to lead to the wasting of the cells around it: and then, moving away from the villus in which it was formed, it draws out the base of the villus, which strengthens itself, and forms the pedicle on which the cyst remains suspended.

Such is the account of the minute structure and formation of the cystic disease of the chorion; and perhaps no instance could afford a better confirmation of the production of cysts by the enormous growth of elementary cells, or a better type of the capacity of cysts thus formed to produce structures resembling those in the abnormities of which themselves originated. A similar capacity is among the characters of all the cysts of which I shall next have to speak.

2. I pass now to the consideration of the cysts that are proliferous with vascular growths from their internal surfaces.

The first group of them may include those that bear glandular growths—the "glandular proliferous cysts," as we may call them, because the minute structure of the substance growing into them is, in its perfect state, exactly comparable with that of a secreting or vascular gland.

Such cysts form part of the group to which the name of "sero-cystic sarcoma" was given by Sir B. C. Brodie, who first clearly distinguished them. They are also part of those which furnished to Dr. Hodgkin the chief grounds for his well-known theory of the formation of solid tumours—a theory which, in regard to at least these growths, has good foundation.

The chief seats of the formation of glandular proliferous cysts are the mammary and thyroid glands. Their history in the thyroid, in which their formation scarcely passes the bounds of health, is amply illustrated in the often cited works of Frerichs and Rokitansky, to which, as well as to the paper by Mr. Simon on the natural structure of the gland, I must for brevity's sake, refer.

Now, from some part of the inner surface of a cyst, a vascular growth may spring; and, gradually increasing at a rate beyond that of the increase of the cyst, it fills more and more of the cavity. At length, the growth wholly excludes the fluid contents of the cyst, and its surfaces come in contact with the remainder of the cyst-walls. The growth may now coalesce with the walls of the cyst, and form one solid tumour, inclosed in and connected with them, just as ordinary solid tumours are invested and connected with their fibro-cellular capsules. Or, growing yet further and more rapidly, the growth, hitherto intra-cystic, may protrude through its cyst-walls and the superjacent integuments,—protruding through them like a hernia of the brain, growing exuberantly over the adjacent skin, and, like such a hernia, reproduced when cut away.

The time in which these changes may be accomplished is extremely various. Usually, the increase of the intra-cystic growth appears to be painless, and it may be very slow: ten years or more may pass with little change; but the increase is generally faster, and it often shows an accelerating rate; so that, late in the disease, the progress is extremely quick, even quicker than that of most cancerous growths.

3. I have said we may not justly regard these recurring cystic growths as examples of malignant disease; yet the fact had better be here inserted, that their mode of growth may be imitated by genuine cancerous diseases.

Cancerous growths may be found in cysts under at least two different circumstances,—namely, in cysts that of themselves appear innocent, and in cysts produced within cancers.

Of the former mode of growth we have examples sometimes in ovarian cysts. Well-marked cancerous growths, usually of the medullary or the alveolar form,

may grow from their walls; and herein is the best—perhaps the only unexceptionable—instance of the transformation of an innocent into a malignant tumour.

The second mode of production of intra-cystic cancers is best shown in some examples of medullary tumours of the testicle. In these we may see a repetition, so far as the outline plan is concerned, of the intra-cystic production of thyroid gland. The great mass of the medullary disease includes smaller masses, completely incapsuled with fibro-cellular tissue, and commonly presenting a lobed and laminated form, at once reminding us of the intra-cystic mammary glandular growths, and justifying the application to them of the principles of Dr. Hodgkin's theory of the growth of cancers.

In these medullary testicles the intra-cystic medullary growths have usually filled the cysts and coalesced with their walls. In rare cases one can discern how the growths spring up as spheroidal, or as pedunculated, branching, and grouped, processes from the interior of the cysts. This condition is peculiarly well shown in a case of cancer of the clitoris, in which the whole of that organ is occupied or concealed by a cancerous mass inclosing several distinctly walled cysts, which are half filled with small, soft, and lobed cancerous intra-cystic growths.

A further consideration of this matter would be out of place in lectures on innocent tumours.

4. I proceed to the consideration of the cutaneous proliferous cysts—*i. e.*, of cysts on whose inner walls a tissue grows having more or less the structure and the productive properties of the skin.

Instances of these in a perfect state are rare. In the large majority of cases the cutaneous structure, if it were ever present, has degenerated or disappeared; and we recognise the relations and import of the cysts only through their containing epidermal and sebaceous materials, of which the production is a peculiar attribute of the tissues of the skin.

Among the parts in which these skin-bearing cysts may be found are some that have no natural connexion with the skin. Thus (*a*) they are frequent in the ovaries: one or more Graafian vesicles enlarge and grow, and then, apparently produce on their inner surface a growth of skin, with its layer of cutis, subcutaneous fat, epidermis, and all the minute appended organs of the proper integument of the body; or (*b*) such cysts may form in the subcutaneous tissue. They are, indeed, rare in this tissue in man, except in cases of congenital growth: but, in the little cysts that are found at or soon after birth, about the brow, or in or near the orbit, the inner surface is often perfectly cutaneous; and Lebert has detected in such cysts all the minute structures and organs of the skin. Some similar specimens of cysts lined with skin are in the Museum of the College. These were taken from the subcutaneous tissue of a cow and of an ox; and in some of them the inner surface of the cyst could hardly be distinguished from the outer hairy integument of the animal—*Med. Gazette, June* 20, 1851, *p.* 1057.

Fatty Tumours—Their capsules, or investing tissues, as an example of those generally connected with innocent tumours—Causes.—Among the solid tumours, the first that may be considered is the fatty or adipose tumour,—the lipoma of some, the steatoma of others; the most simple in its texture; the most like the natural parts; the least liable to variations;—a morbid growth so well known, that I can scarcely hope to impart any interest to an account of it.

Fatty tumours are, I believe, always invested with a capsule or covering of fibro-cellular tissue: and of these capsules, since they exist with most of the innocent tumours, I may speak now once for all. The capsule, then, of such a tumour is usually a layer of fibro-cellular tissue, well organised, dry, and containing blood-vessels proportioned to the size of the tumour. It appears to be formed of the fibro-cellular tissue of the part in which the tumour grows, increased and often strengthened in adaptation to the bulk and other circumstances of its contents. It grows with the tumour, invests it, and at once connects it with the adjacent tissues, and separates it from them,—as *e. g.*, similar fibro-cellular tissue does each muscle in a limb. Its adhesion to both the tumour and the parts around it is more intimate than that of its layers to one another; so that when such tumours are cut into, they may be dislodged by splitting the layers of their capsule, and leaving some of it on the tumour, and some in the cavity from which the tumour is extracted. This, at least, can be done easily unless the tumour has been the seat

of inflammation, which may thicken the capsule and make all its parts adherent to one another, and to the tissues on either side of it.

In the capsule, the blood-vessels that supply the tumour usually first ramify. One principal artery, indeed, commonly passes straightway into the tumour at its deepest part, but the rest branch in the capsule, especially in any thicker parts of it that lie in the spaces between projecting lobes of the tumour. Hence, with the partitions of the tumour that are derived from the capsule, the blood-vessels pass into its substance.

Respecting the causes of these tumours, few things can be more obscure. Nearly all knowledge on this point is negative. The growth may have followed an injury, and we may call this the cause of its formation; but we can give no explanation why such an event as an injury, which usually produces only a transitory impairment of nutrition, or a trivial inflammation, should, in these cases, give rise to the production of a new and constantly-growing mass of fat.

Fibro-cellular tumours—Distinguished from corresponding outgrowths—Their general and minute structure.—[In considering the fibro-cellular tumour, Mr. Paget remarks upon the singularity of its rarity, especially as the tissue of which it is composed is so abundant. For ten tumours formed of fat or cartilage we do not find more than one of this kind.]

As in the last species, so in this, we find instances of both outgrowths and tumours,—*i. e.*, of both continuous and discontinuous overgrowths. The former are, indeed, abundant; for, among them, as being formed chiefly of overgrowing fibro-cellular tissue, we must enumerate, 1st, nearly all the softer kinds of polypi, such as the mucous or gelatinous polypi of the nose, and the polypi of the external auditory meatus; 2ndly, the various cutaneous outgrowths, such as occur in the scrotum, labia, nymphæ, clitoris, and more rarely in other parts; and, as hardly to be defined away from these, the warty and condylomatous growths of skin; and, 3rdly, the overgrowths of scars, the cheloid tumours as they are named; for in all these we find overgrowing tissue, resembling, for the most part, the fibro-cellular in a more or less developed state.

The form in which the fibro-cellular tumours are most frequently seen is that of oval or round masses of soft, elastic, close, and pliant tissue, smooth and uniform, or, when they grow among yielding parts, deeply and variously lobed. Their exterior surface is connected with the adjacent parts by a capsule of fibro-cellular tissue, which generally splits readily. When handled they feel peculiarly tense and elastic; their outer surface may shine like a thin sac full of fluid. On their sections we see opaque white bands, intersecting a shining sacculent basis substance, of serous-yellow or greenish yellow tint. Through this basis the bands course in circles or wavy lines, or form complete partitions, or, in the smaller lobes of the tumour, they run without order, only forming white marks on the yellow ground colour, but giving no appearance of grain, or of regularly fibrous structure.

The peculiar yellow colour of the basis-substance of these tumours, makes them look, at first, like fat; it is due, however, not to fat, but to a serous or synovia-like fluid, which is infiltrated through the substance of the tumour. The mass is just like anasarcous cellular tissue; most of all like the subcutaneous cellular tissue of the back, as one sees it dissected in a dropsical body. When such a tumour is cut through or sliced, the clear yellow fluid oozes from it, or may be abundantly pressed out, while the filamentous tissue contracting becomes denser and more compact, and more uniformly opaque white, like that of the softer varieties of fibrous tumour. It is to these last-named tumours, indeed, that the fibro-cellular have the nearest relations, and into them that they "pass" through gradational specimens; but there is just the same difference, as well as just the same relation, between these kinds of tumours, as there is between the natural fibro-cellular and fibrous tissues, and there is a similar propriety in distinguishing them.

Examined with the microscope, the fibro-cellular tumours display the filamentous tissue or appearance characteristic of that after which they are named. In many cases, or in many parts, parallel, soft, undulating filaments are found collected in fasciculi, which interlace, and from which single filaments can often be traced out; or, where this is not seen, the texture looks filamentous, through markings or wrinkles of its surface. The best developed and most filamentous tissue is in the intersecting white bands: but similar tissue is present everywhere.

The homology of these tumours, in respect of tissue, is just as perfect as that of the fatty tumours. In chemical analysis they may yield gelatine, from the well-formed fibro-cellular tissue; but I believe they yield much more albuminous matter from their imperfectly developed tissue, and from the serous fluid that is soaked in them.

In general, there is nearly complete uniformity through the whole mass of one of these tumours; oftentimes, however, different portions are more or less œdematous (if I may so call them); and, which is more remarkable, portions of cartilage, sometimes partially ossified, may be found in them. I have twice seen this. In the first case, nodules of cartilage were imbedded in the fibro-cellular tumour that grew in the ball of the great toe; and in the second (a similar tumour from the thigh), a portion of its surface, and one of its chief partitions, were formed with cartilage partially ossified.

The most frequent seats of fibro-cellular tumours appear to be the scrotum, the labium, or the tissues by the side of the vagina, the deep-seated intermuscular spaces in the thigh, and the scalp. They may occur, probably, in many other parts; but either they particularly affect these, or else a singular chance has shown them to me in these situations almost alone.

Painful subcutaneous tumors—Their usual seats and structures—Their painfulness—Its supposed relation to nerves enclosing, or adjacent to, them—Differences between these tumours and the "neuromata"—Probable neuralgic nature of the pain.—Painful subcutaneous tumours form a group peculiar for the pain with which they are connected, and which is so remarkable as to justify giving a description of them separate from that of the fibro-cellular and fibrous tumours, with which, considering their other characters, they might be placed.

The painful subcutaneous tumour, or tubercle, has been often well described in relation to its general characters. Its intense painfulness was too striking to escape observation. It was described by A. Petit, Cheselden, Camper, and others; but the first, and to this time the best, general account of the disease, drawn from many instances, was given by Mr. William Wood in 1812. Dupuytren added many instances to those which he copied from Mr. Wood's paper, and made the disease much more widely known.

The especial seat of growth of these little tumours is, as their name implies, in the subcutaneous cellular and adipose tissue. They are most frequent in the extremities, especially the lower: very rarely they occur on the trunk, or the face. They are about four times more frequent in women than in men; they rarely, if ever, begin to form before adult life, or after the commencement of old age. It is seldom that local injury, or any other cause, can be assigned for their occurrence.

The tumour usually lies just beneath the skin, scarcely prominent; it has a capsule loosely connected with all the surrounding parts, unless it be to the cutis, to which it may be tightly fixed, and which, in such cases, is generally thin, tense, polished, and like a superficial scar. Sometimes the small blood-vessels of the skin over and around the tumour are enlarged and tortuous, like those near a cutaneous nævus; but, else, all the adjacent parts appear healthy.

Tumours of this kind rarely exceed half an inch in diameter; they are usually spheroidal, oval, or cylindriform; they are firm, nearly hard, tense, and very elastic. Their outer surface is usually smooth, bright, yellowish, or greyish, or pure white; and their sections have the same aspect and consistence, or are varied by an obscure appearance of pure white fibres traversing a greyish basis.

The characteristic of all these tumours is their pain,—pain which may precede all notice of the tumour, or may not commence till much later, or may be contemporary with it, but which, when once it has set in, may rise to very agony, such as I suppose is not equalled by any other morbid growth. It is not often constant; but generally, without evident cause, or with only a slight touch of the tumour, a paroxysm of pain begins, and, gradually increasing, soon reaches a terrible severity. Beginning at or near the tumour, it gradually extends into all the adjacent parts, often flashing like electric shocks, from one part of the limb to another, or to the whole trunk. Such a paroxysm may continue for a few minutes, or for several hours, and then it gradually subsides, leaving the parts sore and tender. While it lasts, the tumour, whatever may be its condition at other times, is always exquisitely sensitive; the muscles of the limb may act with irregular spasms, or

general convulsions, like those of an epileptic seizure, may ensue. Sometimes, too, the tumour itself swells, the blood-vessels around it become larger and more tortuous, and the skin becomes œdematous or congested, imitating the change which sometimes ensues in a neuralgic part. There are many diversities in the characters and modes of the pain; but this belongs to all the instances of it,—that its intensity is altogether disproportionate to its apparent cause, and that it cannot be explained by anything that can be seen in the structure or relations of the tumour.

This pain suggests interesting questions in relation to the pathology of all tumours; but, before considering it, let me add some facts to complete the history of these. They appear usually to be of very slow growth. I removed one from the leg of an elderly woman, who had noticed a gradual increase of it for ten years; yet, at last, it was less than half an inch in diameter. In other cases they may more quickly attain the same size; but this seems the limit of their size; and for any number of years, they may remain sources of intense pain, and yet undergo no apparent change of size or structure. They are usually single. I have found only one case in which more than one existed: in this case three lay close together over the great gluteal muscle. When excised, they are not apt to recur. I removed one from the back of the leg of a lady twenty-eight years old, from whom, two years previously, a similar growth was excised from the same part. After the first operation the pain was scarcely changed; after the second it ceased, and never returned. Sir Astley Cooper removed two painful tumours, at an interval of a year, from a young lady's leg; but these are the only instances of apparent recurrence that I have found. I believe that they have no tendency to ulcerate, or to assume any of the peculiar characters of malignant disease.

In considering, now, the painfulness of these tumours, the first question is their relation to nerves: are nerves involved in them? and do they, as Velpeau seems to hold, differ from neuromata—i. e., from the fibrous or fibro-cellular tumours within the sheaths of the nerves—only in their position? are they only tumours within the superficial or subcutaneous nerves?

The general opinion is against this supposition. Dupuytren says that he dissected several of these tumours with minute care, and never saw even the smallest nervous filaments adhering to their surface. I have sought them with as little success with the microscope. Of course, I may have overlooked nerve-fibres that really existed. It is very hard to prove a negative in such cases; and cases of genuine neuroma, i. e., of a fibrous tumour within the sheath of a nerve, do sometimes occur which exactly imitate the cases of painful subcutaneous tumour. Such a case was under Mr. Stanley's care last autumn. An elderly gentleman had for two years observed a small subcutaneous tumour over the lower part of the semimembranosus muscle. It was easily moveable, and, till within the last three months, had not been inconvenient; but at this time it became the seat and source of pain exactly like that of a painful subcutaneous tumour. It was removed; and I was able to trace, with the microscope, an exceedingly slender nerve, the filaments of which were spread out over one part of the tumour. The tumour was within the neurilemma, and was uniformly firm, elastic, yellowish, and composed of well-formed fibrous tissue.

Many that have been called painful subcutaneous tumours may have been such neuromata as this was. Still, I am disposed to think that most of them are only so connected with nerves, as ordinary innocent tumours are, that receive a few nerve-fibres in their substance. For (1.) the connection of the nerves with even very small neuromata is not so difficult to demonstrate, but that it should have been found, if it had existed, in some of the many painful tumours that have been examined. (2.) The neuromata often occur in large numbers in the same patient; the painful subcutaneous tumour is nearly always single. (3.) The neuromata usually grow constantly, and seem to have no limit of size; even when subcutaneous, they commonly exceed the size of the painful tumours, which generally grow to a certain small size, and in it remain stationary. (4.) Neuromata are most frequent in the male, the painful subcutaneous tumours in the female sex. An analysis of twenty-six cases of neuroma taken promiscuously showed that nineteen had occurred in men, and seven in women; while in twenty-eight cases of painful subcutaneous tumours twenty-three were in women, and five in men;—evidence which is almost conclusive for the different natures of the two diseases.

However, even if it could be proved that these painful tumours are within nerves, the question respecting the source of pain would not be fully answered. We cannot ascribe the pain to merely the altered mechanical condition of the nerve-fibres; for tumours that are evidently within nerves are not always nor even usually, painful. It is remarkable, that in nearly all the cases in which large tumours have existed in the trunks of nerves, there has been little or no pain. The facts collected by Mr. Smith are clear on this point. Moreover, the subcutaneous tumours themselves often remain long painless, and then become, without any other apparent change, extremely painful; and there are instances of tumours exactly resembling them, except in that pain has never been felt in them. I removed such an one from a lady's forehead. It was about as large as a pea, had been two years growing in the subcutaneous tissue, and had never given pain except once, when it was severely struck. It had all the apparent characters of structure of the painful subcutaneous tumour. I repeat, therefore, that we cannot assign the pain in these cases entirely to an altered mechanical condition of nerve-fibres in or near the tumour. We must admit, though it be a vague expression, that the pain is of the nature of that morbid state of nerve-force which we call *neuralgic*.

Of the exact nature of this neuralgic state, indeed, we know nothing; but of its existence as a morbid state of nerve-force, or nervous action, we are aware in many cases, in which we can as yet trace no organic change, and in many more, in which the sensible organic change of the nerves is inadequate to the explanation of the pain felt through them. In both these sets of cases we assign the pain (speaking vaguely) to a functional rather than to an organic disorder of the nerves,—a disorder commencing in the nerves of the part which is the focus of the pain, but transmitted from them to others which, in the nervous centres, are connected with them.—*Med. Gazette, July* 4, 1851, *p.* 1.

Fibrous tumours—Distinction from corresponding outgrowths—Investments and structures—Microscopic characters—Formation of cysts, and deposit of lime-salts, constituting the "fibro-cystic" and "fibro-calcareous" tumours—Disintegration and other diseases.—[The term "fibrous" is, perhaps, the best to signify the natural likeness of tumours to the natural fibrous and tendinous tissues of the body. Where they are constructed of more than one elementary tissue such names may be used as "fibro-muscular," "fibro-elastic," &c. The most common examples of this kind are the fibrous tumours, or bodies of the uterus—"the hard fleshy tubercle of the uterus," as described by Dr. Baillie. The general characters of this species may be mentioned.]

First, the usual distinction must be drawn between the tumours and the outgrowths of the same structure. The uterus presents examples of both. The fibrous uterine polypi, more properly so called, are continuous outgrowths of and from the substance of the uterus; the mucous membrane, and the muscular and fibrous tissues of the uterus, growing, in variety of proportions, into its cavity and that of the vagina. The fibrous tumours, as distinguished from these, are discontinuous growths of similar tissue, in or near, not of, the substance of the uterus.

[These fibrous tumours have usually a fibro-cellular capsule in the uterine walls; sometimes so dry and loose, that when the tumour is cut, it almost of itself escapes from its cavity or bed. In the same manner are covered the fibrous tumours in the subcutaneous tissue and the nerves.]

As on the exterior, so in sections, these tumours present various degrees of lobular arrangement. Some are uniform and scarcely partitioned; while others are formed in distinct and easily separable pieces; and between these are numerous intermediate forms.

As a general rule, the vascularity of a fibrous tumour is in an inverse proportion to its singleness and toughness of construction; for the blood-vessels, as in the natural fibrous structures, are distributed chiefly or exclusively in the fibro-cellular tissue partitioning and investing the denser substance. The tumours thus present various degrees of vascularity. Some, when the vessels of the uterus are fully injected, appear still quite white; but some appear as highly coloured with the injection as the uterus itself.

In microscopic examination, one finds, among the fibrous tumours, certain varieties of composition which are not always, if at all, expressed in their more

manifest characters. In all, I believe, a large portion of the mass consists of tissue resembling the tendinous or fibrous, more or less perfectly developed, and variously arranged.

To the varieties of the fibrous tumour already named, two must yet be added, depending on changes which we may regard as degenerations. One consists in the formation of cysts, the other in the deposit of calcareous and other salts in the substance of the tumour; suggesting, severally, the names of the "fibro-cystic," and the "fibro-calcareous" tumour.

The formation of cysts is not rare in fibrous tumours, especially in such as are more than usually loose-textured. It may be due to a local softening and liquefaction of part of the tumour, or to an accumulation of fluid in the interspaces of the intersecting bands; and this is the probable mode of formation of the roughly bounded cavities that may be found in uterine tumours. But, in other cases, and especially in those in which the cysts are of smaller size, and have smooth and polished internal surfaces, it is more probable that their production depends on a process of cyst formation, corresponding with that traced in the cystic disease of the breast and other organs. The whole subject, however, in relation to the origin of the cysts, needs further consideration; and I will speak only of the general appearance of the fibro-cystic tumours.

First, then, we find examples of fibrous tumours thickly beset with small well defined and lined cysts. This appears to be the nature of the "hydatid testis" described by Sir A. P. Cooper: at least, most of the specimens that I have seen of it make me think that this is, essentially, a fibrous tumour in the testicle, with more or less of cyst formation in the tumour. A similar condition may be found, but is rare, in fibrous tumours of the uterus. It may be found also, I believe, in fibrous tumours in nerves and other parts.

In another set of cases, we find one large cyst existing alone, or far predominating over all the others, in a fibrous tumour. This is most frequent in the tumours in the nerves, and in the uterus. In the latter organ it has peculiar interest, because the cyst, if it attain a great size, may be mistaken, and treated for an ovarian cyst. Several such cases have happened. The preparation from one is in the Museum of the College; the history of which sent by Sir Everard Home, is that it is "A portion of an uterus, in which a very large encysted tumour had formed. The patient had been twice tapped, and the cyst emptied. The case was supposed to be ovarian dropsy during life." In another case, Mr. Cæsar Hawkins, suspecting ovarian disease, drew fifteen pints of fluid from a great cyst in a fibrous tumour of the uterus. The patient died a long time afterwards, and the specimen, which is in the museum of St. George's Hospital, shows an enormous fibrous tumour in the side wall of the uterus, having one vast cavity, and in its solid part many small cysts.

With regard to the fibro-calcareous tumour, it is to be observed that two methods of calcification exist,—a peripheral, and an interstitial. In the former, which is the rarer, we may find an ordinary fibrous tumour coated with a thin, rough, nodulated layer of chalky or bone-like substance. In the latter method, a similar substance is deposited more abundantly throughout the tumour, and is usually so arranged, that, by maceration, one obtains a heavy hard mass, variously knotted, and branched like a lump of hard coral. Such a specimen is here; it was found in a grave-yard and was sent to Mr. Hunter as an urinary calculus; and a good one it would have been, seeing it is about five inches long. On analysis it yielded 18·644 per cent. of animal matter, consisting of gelatine, with a small proportion of albumen; and its other chief constituents were found to be phosphate and carbonate of lime, the proportion of carbonate being greater than in human bone.

A similar, but larger, specimen is in the Museum of St. George's Hospital; and one yet larger in that of the Middlesex Hospital, which has been described, with a history full of interest, by the President.

Now, the change which ensues in these cases is not ossification; true bone, I believe, is not formed in the fibrous tumours of the uterus. The change is a calcareous degeneration, consisting in an amorphous deposit of salts of lime and other bases in the place of the fibrous tissue. But the process is important, as being the manifestation of a loss of formative power in the tumour. The calcified fibrous tumours probably never grow, and are as inactive as the calcified arteries of old age.

With these degenerations I may mention (though it has probably more of the nature of a disease), a softening of fibrous tumours, in which, quickly, and apparently in connection with increased vascularity and congestion, they become œdematous, and then, as their tissue loosens, become very soft, or even diffluent, or else break up, and appear shreddy and flocculent. In this state the outer and less softened part of the tumour may burst, or they may suppurate or slough.

The most frequent seat of fibrous tumours is, beyond all comparison, in the uterus. Indeed, we may hold that the fibrous uterine tumours are the most frequent of all innocent tumours; Bale's estimate being probably true, that they are to be found in 20 per cent. of the women who die after 35 years of age. But I shall not dwell on the fibrous tumours in the uterus, fully described as they are by Dr. Robert Lee, and other writers on uterine pathology. I will only say, that such tumours may occur near, as well as in, the uterus; but that, in respect of this nearness, they are probably limited to those parts in which fibrous and smooth muscular tissue, like those of the uterus, extend; namely, to such parts as the utero-rectal and utero-vesical folds, and the broad ligaments.

Next to the uterus, the nerves are the most frequent seats of fibrous tumours. But of these, while I can refer to the splendid monograph by Dr. Smith, I will say only that, among the neuromata the fibrous tumours reach their climax of multiplicity, existing sometimes in every nerve of the body, and amounting to 1200 or more in the same person.

So, too, I will pass by the fibrous tumours of bones, referring for these to Mr. Stanley's Treatise on the Diseases of the Bones, and to Mr. Cæsar Hawkins's Lectures on their Tumours.

Instead of these instances of fibrous tumours, the histories of which have been so fully written, I will select for illustration some that are less generally studied, especially those that are found in the subcutaneous tissue, and deeply seated near the periosteum, or other fibrous and tendinous structures.

Particular illustrations of fibrous tumours growing on tendinous or fibrous tissues—In the subcutaneous tissue—In or upon periosteum and bone—In or about the jaws.—The fibrous tumours of the subcutaneous tissue, to which those of the submucous tissue closely correspond, pass, as I have already said, with insensible gradations into the fibro-cellular. Many may be found that might deserve either name; but it is not very rare to find specimens with all the distinctive features ascribed to the fibrous tumours of the uterus. These form firm, nearly hard, and tense, round or oval masses imbedded in the subcutaneous fat, raising and thinning the cutis. They may here attain an immense size, as in a case from the Museum of Mr. Liston. A tumour, weighing upwards of 12 pounds, is here shown, which was removed from the front of a man's neck, together with a portion of the integuments and platysma that covered it. It was fifteen years in progress, and has now an aspect such as, I think, belongs only to a fibrous tumour. Specimens, however, of this size are very rare; they are commonly removed while less than an inch in diameter.

In microscopic characters the subcutaneous fibrous tumours have the general properties of the species, but they commonly contain elastic tissue, and they are apt, I think, to be lowly developed, having only a fibrous appearance, or even seeming composed of a uniform blastema, with imbedded elongated nuclei, like the material for the formation of new tendons.

A peculiar and important character in these fibrous tumours is, that though they may be completely isolated in every other part, they often adhere closely to the lower surface of the cutis, and that, if in any degree irritated, they soon protrude through it, and form vascular masses,—"fungous growths" as they are called. When this happens they may bleed profusely, and in a manner which, I believe, is not imitated by any other innocent tumour. Nearly five years ago, a woman 52 years old, was under Mr. Stanley's care, with a tumour that projected through the integuments in the inner part of the thigh, its base being imbedded deep in the subcutaneous tissue, and its surface protruding raw and ulcerated. The origin of this tumour was uncertain, but it had existed more than nine years; it had grown quickly, and had begun to protrude within two and a half years. From its ulcerated surface hemorrhage frequently ensued; and the patient stated that at one time two quarts of blood flowed from it. The tumour was excised, and large

vessels that entered its base bled freely in the operation. It appeared to be a well marked specimen of a soft and lowly developed fibrous tumour.

A similar case was under my care in a woman twenty-seven years old. The tumour, of three years' growth, and protruding over the front of the tibia, was similarly ulcerated, and used often to bleed; sometimes it bled largely, and once as much as half a pint of blood flowed from it. This also on removal appeared to be a fibrous tumour.

I have here, through the kindness of Mr. Birkett, a specimen of a much more formidable example of the same fact. A woman, sixty years old, had a large pendulous tumour in the front wall of her abdomen, suspended just below the umbilicus, and reaching half way to her knees. Its surface had a very inflamed appearance, and the separation of a slough from its posterior part gave issue to such hemorrhage as proved nearly fatal.

The tumour is a large heavy mass, which was attached to the sheath of the rectus. It is everywhere firm and tough, except where its substance appears broken by blood issuing from numerous large vessels that traverse it. Mr. Birkett, who examined it soon after the patient's death, found its texture certainly fibrous.

The fibrous tumours that occur in or near accumulated fibrous tissues are well exemplified, medically, by those of the dura mater, and, surgically, by those which may be found at the tarsus or metatarsus imbedded among the complicated ligaments and other deep-seated parts. Some well-marked specimens are in the Museum of the College. One, from the collection of Mr. Langstaff, is an oval tumour, six inches long, fixed to the periosteum of the tarsal bones and to the adjacent parts, and filling the sole of the foot from the os calcis to the basis of the first phalanges. It was removed, with the foot, from a nobleman, thirty-five years old, in whom it had been observed gradually increasing for thirty years. It has all the general aspects of the fibrous tumour, as typified in those of the uterus.

A very similar specimen is shown in a tumour growing over the whole length of the dorsal aspect of the metatarsus; and with these may be mentioned a tumour which has some historic interest, for it was removed from the Hon. William Wyndham, the associate and friend of Pitt, and Fox, and Burke,—"the model of the true English gentleman." When he was sixty years old, and an invalid, he exerted himself very actively one night in saving from fire the library of a friend. During his exertions he fell and struck his hip; and from that injury the tumour appeared to derive its origin. It grew quickly, and in ten months it seemed necessary to remove it. Mr. Wyndham submitted to the operation, his biographer says, "with neither hope nor fear;" and it would be difficult to describe so briefly a more unfavourable state of mind. The operation was performed by Mr. Lynn. The tumour was attached to capsule of the hip, and was with difficulty removed. At first all went well; but then, it is said, symptomatic fever came on, and death occurred on the 16th day. The tumour was, by Mr. Wyndham's request, placed in the Museum of this College; and I have had it sketched because it might be signalized as one of the most characteristic examples of this species.

I might add several to these cases, but these may suffice for illustrations of the fibrous tumours connected with the deep-seated fibrous tissues. All the specimens that I have seen have presented the strong white bands intersecting a greyish or dull white basis-substance, the characteristic firmness, heaviness, and tension; all, in microscopic examination, have shown the tough fibrous structure or appearance; all have yielded gelatine in boiling.

The fibrous tumours in the subcutaneous and deeper tissues are isolated, discontinuous growths, circumscribed by fibro-cellular tissue. In this they differ from most of those in the group of which I shall next speak—namely, the fibrous tumours connected with periosteum and bone; for these accord with the characters of outgrowths rather than of tumours, in that they involve the substance of the periosteum, including it, and investing or covering the bone.

The favourite seats of the fibrous tumours of bone and periosteum are about the jaws; on other bones they are very rare. The College-Museum is, I suppose, pre-eminently rich in fibrous tumours connected with the jaws, containing as it does the chief of those that were removed by Mr. Liston,—a series illustrative at once of his admirable dexterity, and of his sound knowledge on pathology.

These tumours of the jaws may, to both touch and sight, present the ordinary characters of the fibrous tumours, as already described. They usually approach the round or oval shape, but are generally knobbed, or superficially lobed, or botryoidal as some have called them. They are firm, dense, and heavy. On section, however, the majority of them, I think, are more uniform than the fibrous tumours of other parts. They are generally almost uniformly white, and scarcely intersected by any fibrous bands, except such as may divide them into lobes. Many of them also present, in their interior, minute spicula of compact, white bony texture.

Among tumours so diverse in their seats and relations as the fibrous tumours, there are perhaps few things relating to their life that can be stated as generally true.

In the uterus many may exist at the same time: the whole wall of an uterus may be crammed with them, while others project from it into the peritoneal cavity. As Walter and others have observed, when a fibrous tumour fills the cavity of the uterus, or projects from it into the vagina, it is not usual for another to be found in the walls. Such cases do indeed occur, but they are comparatively rare. It is yet much more rare for fibrous tumours to be found in any other part at the same time as in the uterus. I find but one such case recorded; a case by Dr. Sutherland, in which, with several fibrous tumours in the uterus, one was found in the groin of a lunatic forty-two years old. But such a case is a most rare exception to the rule; or, indeed, may be more like an example of the rule, if the tumour were connected with the round ligament, and the therein continuous tissue of the uterus.

In the nerves, as in the uterus, a multiplicity of fibrous tumours may be found; but so far as I know the rule of singleness prevails in every other part liable to be their seat.

The development of fibrous tumours is usually, I believe, through nucleated blastema.

Their growth is often very slow, so that tumours of thirty or more years' standing are found still far short of the enormous dimensions of some of the last species. But no general rule can be made on this point, especially since the rate of growth is influenced by the resistance offered by the more or less yielding parts around.

The extent of growth appears unlimited; and among the fibrous tumours are the heaviest yet known. They have weighed fifty, sixty, and seventy pounds. The tumour that induced Walter to write his admirable essay weighed seventy-one pounds. He refers, also, to one of seventy-four pounds, and to one described in an American journal as having been estimated at one hundred pounds.—*Med. Gazette, July* 18, 1851, *p.* 89.

Fibroid or fibro-plastic tumours—Usual seats and relations—sectional and microscopic characters—Cases of the disease—its aptness to recur—Cases apparently of a malignant form—Account and examples of a peculiar form of recurring fibroid tumours, and of malignant fibrous tumours, with observations on the diseases that seem intermediate between the innocent and the malignant. Fibro-plastic tumours.—M. Lebert has given this name to a group of tumours which he first clearly described. The characters of the group are, in many specimens, well marked, and quite distinct from any other species of tumour that I have yet seen; but I must admit myself unsure at present of the exact boundaries and relations of the group.

The fibro-plastic tumours may be found in many situations. Those which I have been enabled to examine completely have been on the upper and lower jaws, in the mammary gland, and in the neck, near the thyroid gland. M. Lebert mentions, besides these situations, the bones in general, the eyelids and conjunctiva, the subcutaneous tissue, the cerebral membranes, and the uterus.

In connection with this variety of place, they may vary in external form; but their tendency is to the spherical shape. According to their general consistency, M. Lebert describes two principal varieties—a softer and a firmer. The softer variety, exemplified by the aural polypus, is yellowish, succulent with thin yellow fluid, soft but elastic, rather tough, and, in both general and microscopic characters, like the substance of exuberant weak granulations. The firmer variety is that which alone I have been able to recognise as a distinct tumour, and which alone, therefore, I shall especially describe.

The tumours of this variety, then,—the proper fibro-plastic tumours,—are usually well defined, and either invested with a fibro-cellular capsule, or else easily separable from the surrounding tissues. They feel like uniformly compact masses, but are in different instances variously consistent. The most characteristic examples are firm; and (if by the name we may imply such a character as that of the muscular substance of a mammalian heart) they may be called "fleshy." Others are softer, in several gradations to the softness of size-gelatine. Even the firmer are brittle, easily crushed or broken; they are not tough, nor very elastic, like the fibro-cellular or fibrous tumours; neither are they grumous or pulpy; neither do they show a granular or fibrous structure on their cut or broken surface.

On section, the cut surfaces appear smooth, uniform, compact, shining, succulent with a yellowish, not a creamy, fluid. A peculiar appearance is commonly given to these tumours by the cut surface presenting blotches of dark or livid crimson, or of a brownish or a brighter blood-colour, or of a pale pink, or of all these tints mingled, on the greyish white or greenish basis-colour. This is the character by which, I think, they may best be recognised with the naked eye, though there are diversities in the extent, and even in the existence, of the blotching. The tumour may be all pale, or have only a few points of ruddy blotching, or the cut surface may be nearly all suffused, or even the whole substance may have a dull modena or crimson tinge, like the ruddy colour of a heart, or that of the parenchyma of a spleen. The presence of cysts containing serous or bloody fluid may modify their appearance, but without obscuring their more essential characters; or, again, varieties may be connected with the locality of the tumour; such as, *e. g.*, that when they grow on or within bones, small osseous particles are commonly scattered through them.

However, among all these varieties, the fibro-plastic tumours are seldom difficult to recognise; they are as well marked as most of the species, and with microscopic help can very rarely be mistaken. The microscope shows that nearly the whole mass is composed of cells and other corpuscles, of which the following are the chief forms:—

1. Cells of oval, lanceolate, or angular shapes, or elongated and attenuated like fibro-cells or caudate cells, having dimly dotted contents with single nuclei and nucleoli.

2. Free nuclei, such as may have escaped from the cells; and among these, some that appear enlarged and elliptical, or variously angular, or elongated towards the same shapes as the lanceolate and caudate cells.

3. As the most peculiar form,—large, round, oval, or flask-shaped cells, from 1-300th to 1-1000th of an inch in diameter, which contain from two to ten or more oval, clear, and nucleolated nuclei, imbedded in clear substance. These are "parent cells," or "brood cells," such as one may find sometimes in actively growing granulations, and such as exist among the essential structures of the thyroid gland.

All these forms of corpuscles lie indiscriminately placed in a dimly granular substance, with abundant granular matter and free nuclei; or else, a material thus composed is traversed by filaments, and bundles of fibro-cellular tissue, and blood-vessels.

Such are the microscopic characters of the fibro-plastic tumours, and these as sufficiently distinguish them from all other innocent tumours, as their general aspects and histories do from the malignant ones.

Now, respecting the histories of fibro-plastic tumours, the cases hitherto observed are perhaps too few and too various to justify many general conclusions. The chief facts are, that these tumours usually occur singly, and most commonly in youth, or before old age, that they generally grow slowly and without pain, and that they occur without any known cause, such as injury or hereditary disposition. I do not know any degenerations to which they may be prone, and their permanently cellular forms show them to be less apt for development than for growth.

They have not usually any character of malignancy. Lebert's opinion is very decided on this point; and it is confirmed by some of the cases I have watched.

[There are some exceptions to this rule, however. Mr. Paget has seen two cases of the same kind of tumour having a different issue. The same doubts exist, with peculiar force, with regard to the two following groups.]

For one group, the name of "*Recurring Fibroid Tumours*" may, for the present, suffice: their chief characteristics being that their general aspect very closely resembles that of the common fibrous tumours, their microscopic structure is in many respects like that of the fibro-plastic tumours, and the most striking feature in their history is their proneness to return after removal.

Prof. Gluge has given a good general account of the history of such tumours as these, as examples of the forms transitional to cancer. He names them "albuminous sarcoma;" a term one hears frequently used, without, perhaps, any clear meaning, yet generally, I think, with the suspicion that the growths to which it is applied are not wholly innocent. Among the cases which he cites, one coincides exactly with those I have met with. A major, 45 years old, fell from his horse, in 1843. Six or seven weeks afterwards, a tumour appeared over his scapula. It was removed, but after some months returned. Between 1843 and 1848, four such tumours were removed from the same part. In 1848, the patient was under the care of M. Seutin, who removed the fifth tumour, and Gluge's description of this, including the expression that in colour and consistence it was like the muscular tissue of the intestinal canal, leaves little doubt that it was like the less firm of the specimens that I have been describing. In the last of these five operations, and in one previously, the removal of the tumour was followed by free cauterization of the wound; yet the last account published by Professor Gluge was, that in April, 1849, a sixth tumour had appeared in the same part: and he has informed me, by letter, that in 1850 the patient died.

It will be observed that in all these cases, recurrence is the only feature in the history of the disease making it resemble the malignant growths. And a case by Dr. Douglas Maclagan, the most instructive of all that have been recorded, proves that this tendency to recurrence may at length cease. The case is related in the 48th volume of the "Edinburgh Medical and Surgical Journal."

A girl, 22 years old, had a tumour, of three years' growth, on the left lumbar region about an inch from the spine. In 1832, it was about as large as a Jargonelle pear, firm, but elastic and moveable, and below it was a portion of indurated skin. The tumour and diseased skin were removed, and the former "possessed most of the characters of a simple fibrous tumour." After about twelve months the disease returned in the scar. Three little tumours formed, and these with the scar were removed freely, in February, 1834. "The extirpated mass bore a striking resemblance to that previously removed." Between twelve and eighteen months later a third growth appeared; which, after increasing for a year and a half, was removed. "It had the same elastic feel and fibrous appearance; and the semi-transparent pinkish grey colour was the same as in the original tumour." After this operation no fresh growth ensued, and Dr. Maclagan informs me that the patient remains perfectly well.

[Cases of a similar kind have been described both by Dr. Maclagan and Mr. Syme; and there is one also accurately described and figured by Dr. Hughes Bennett.]

The references to these, and the accounts that I have given of other cases, may suffice to prove the existence of a group of tumours having these remarkable characters in common:—1st. A general resemblance to the fibrous tumours in their obvious characters; 2d. A microscopic texture resembling that of the fibro-plastic more than of any other tumour, yet differing in the absence of the many-nucleated cells; 3d. A tendency to local recurrence after removal, and, in the worst extremity, to protrusion and ulceration, like a malignant growth; 4th. An absence of those events which, in cases of ordinary malignant growths, would coincide with this local recurrence, such as cachexia, and the affection of distant parts, or of the lymphatics.

How may we interpret their singular proneness to recur? Two views may be taken of the facts. The tumours may, from the first, be formed of a cluster or group, and then the removal of one of them only leaves the remainder to continue their growth; or, 2dly, the apparent recurrence may be a real one, such as we suppose occurs in the case of cancers; in which we presume that, in a first operation, every morbid structure already formed in a part is removed, and entirely new growths are produced in the same part.

The former view is supported by whatever of resemblance exists between these

and fibrous tumours, whose proneness to multiplicity is remarkable; and by the fact that sometimes, after the removal of one of these, two, or a more numerous group, have appeared in the same part. Yet the objections to this view appear to me more weighty. If we suppose, in any case in which six or seven tumours have been removed in succession from the same part, in as many years, that all began to grow at or about the same time, the last of these ought, according to the rate of growth of the rest, to have come into view much sooner. If the second tumour were not discernible in the first operation, where, or of what size was the sixth?—or why did it require six or more years to come to the same bulk as the supposed coeval second tumour acquired in one year? It may be added that some of these tumours appear to have recurred in the substance of a scar left after a former operation—in a tissue, therefore, which did not exist at the time of the previous operations. Nor must we overlook, in connexion with this apparent aptness to recur, the fact that the later-formed of these tumours may assume certain characters of the thoroughly malignant growths which were not observed in the earlier. In one of the cases I have seen, the last tumour was, in general aspect, hardly to be distinguished from brain-like tumour, though, in microscopic characters, essentially like its predecessors. In one of Professor Gluge's cases, the transitions to completely malignant characters appeared yet more sure. Mr. Syme also expresses a similar transition; describing, as the usual course of these cases, that, after one or two recurrences of the tumour, the next new productions present a degeneration of character, excite pain, proceed to fungous ulceration, and thus in the end prove fatal. So that, although there be cases in which this evil career has not been run, yet I think we may regard these tumours as approximating to characters of malignancy, not only in their proneness to recur after removal, but in their aptness to assume sometimes the more malignant features the more often they recur. Whatever be the truth concerning the supposed transformation of an innocent into a malignant morbid structure, I think it cannot be doubted that, in the cases of some recurring growths, the successively later growths acquire more and more of the characters of thoroughly malignant disease.

The second group of tumours, which, while bearing an apparent relation to the fibrous tumours, yet exhibit features of malignant nature, are those to which, till their characters are more perfectly known, I would give the name of *Malignant Fibrous Tumours*. In both general and microscopic characters they exactly resemble, I believe, the ordinary fibrous tumours already described; but they differ from them in that they recur once or more after removal, and form not only in their first locality, but in internal parts remote from it.

The most remarkable instance of the kind that I have seen was in a poor widow who was under my care ten years ago. She was forty-seven years old, and had been crippled with acute rheumatism for ten years before she found a small moveable tumour in her right breast. This had increased slowly till seven weeks before I saw her, when, having struck it, it began to grow very rapidly, and became the seat and centre of severe pain. It increased to between two and three inches in diameter, was nearly spherical, very firm, tense, and painful,—even extremely painful. I supposed it to be a large hard cancer, and removed the whole breast.

I found the tumour completely separable from the mammary gland, which was pushed aside by it, but was healthy: the cut surface could not, I think, have been distinguished from that of an ordinary fibrous tumour of the uterus, with undulating white bands, excepting that part of it had a suffused purplish tinge. The whole substance of the tumour had the same characters; and in microscopic examination, often and lately repeated, I could find nothing but tough, compact, well-formed, fibrous tissue, with imbedded elongated nuclei. On boiling, gelatine was freely yielded. In short, I believe it would be impossible to distinguish, by any means but the history, this tumour from a common unmixed fibrous tumour of the jaw or subcutaneous tissue.

Three months after the operation a tumour appeared under the scar. It grew very quickly, and felt just like the former tumour. After two months the thin scar began to ulcerate, and the integuments around sloughed; and shortly the whole of this tumour was separated by sloughing, and was removed entire. This also had and still retains every character of the common fibrous tumour.

After the separation of this second tumour, a huge cavity remained, with slough-

ing walls; then, as the sloughing cleared away, hard knots, like those of a cancerous ulcer, grew up from the walls, and the disease assumed all the characters of a vast and deep hard cancerous sore. In two months she died. I found the ulcer nearly a foot in diameter: its walls were formed of a thick nodulated layer of hard, whitish, vascular substance, like the firmest kind of medullary cancer. Both lungs contained between twenty and thirty small masses of similar substance imbedded or infiltrated in their tissue; and this substance I have recently again examined, and found to be a complete fibrous tissue, like that of the first tumour removed. I found no similar disease elsewhere.

All the characteristic features of malignant disease were thus superadded to the growth of a tumour which appeared to be, in every structural character, identical with the common innocent fibrous tumour. Nearly the same events were observed in the following case:—In 1835, a man was in St. Bartholomew's Hospital, under the care of Mr. Earle, with a large spheroidal tumour, lying by the base of his scapula, and extending beneath it. It was removed; and I remember it was easily enucleated from the adjacent parts, and was called "albuminous sarcoma;" but it was not preserved. About a year afterwards he returned with a yet larger tumour in the same situation. Mr. Skey removed this, together with a large portion of the scapula, to both surfaces of which it was closely united. The wound was scarcely healed, when another tumour appeared, and increased rapidly. With this the patient died, and growths of similar substance, white, very firm, and nodulated, were found beneath that part of the pleura which corresponded with the growth on the exterior of the chest. I state these particulars from memory; but I have found, from repeated recent examinations, that the tumour removed by Mr. Skey is of fibrous texture, resembling the common fibrous tumours both in general and in microscopic characters, and like them, yielding gelatine when boiled. It is lobed, with partitions of fibro-cellular tissue, and its several lobes are intersected with obscure opaque white fibres: it is tough, compact, and heavy, and tears with an obscure fibrous grain. It is easily dissected for the microscope, tearing into fasciculi, and appears composed wholly of closely-placed and nearly parallel undulating filaments. A few shrivelled nuclei appear among the fibres, but no cells are distinguishable.

To these cases I may add, though it be an imperfect one, that of a woman from whose back Mr. Lawrence removed a large well-marked fibrous tumour, which had grown nine months after one of the same appearance had been removed from the same part. Before removed, this was judged by all who saw it to be malignant; but it presented a genuine fibrous structure, and could not, I think, be distinguished from an ordinary fibrous tumour.

Such are the cases which make me believe that tumours occur, resembling in all respects of structure and chemical composition the fibrous tumours of the uterus, (excepting their muscular fibres,) or of the bones or subcutaneous tissue, yet differing from these in that they pursue a course like that of cancers, recurring after removal, growing at the same time in internal organs, tending to sloughing or ulceration, and in these processes involving adjacent structures. I have related only cases in which the fibrous structure was proved by microscopic examination; but I have little doubt that others might be added from the cases of tumours of the jaws and other bones, believed, from their general appearance, to be fibrous, yet pursuing a malignant course. I will only add that these are not such growths as those which Müller and others have named Carcinoma fibrosum, and which, I believe, are always infiltrations in the substance of the affected organs, including cancer-cells, with their fibrous tissue, and having in this tissue such hardness, stiffness, and other peculiarities of structure, as make it easily distinguishable from the normal fibrous tissue and its imitation in the fibrous tumours.—*Med. Gazette, Aug.* 1, 1851, *p.* 177.

Cartilaginous tumours.—General characters and relations, when growing in soft parts, and on or in bones—their rates of growth—degenerations and defects.—[Mr. Paget next proceeds to the general character and relations of cartilaginous tumours. He says:]

The name of cartilaginous tumours may be given to those which Müller, in one of the most elaborate portions of his works on Cancer, has named Enchondroma. Either term will sufficiently imply that the growth is formed mainly of a tissue

like cartilage; and I would at once point out the singularity of such tumours being formed, and growing to so great a size as I shall have to describe, although cartilage is not formed for the repair of its own injuries, nor, at least in man, in a perfect manner, for the repair of the injuries of bone.

The cartilaginous tumours are found, in the large majority of cases, connected with the bones and joints. However, they occur not rarely in soft parts, completely detached from bone. Thus, in the pure form, or mixed with other tissues, they are met with in the testicle, mammary gland, subcutaneous tissue, and lungs, and in the soft parts near bones; but among all the soft parts their favourite seat appears to be the neighbourhood of the parotid gland. The greater part of the solid tumours formed in this part have more or less of cartilage in them.

Cartilaginous tumours that are connected with bones may occur in two distinct positions—namely, within the walls, or between the walls and the periosteum; very rarely they grow in both these positions at once. When they are within the bones they are isolated and discontinuous, and are surrounded by the walls, which may be extended in a thin shell or capsule of bone around them, or may be wasted and perforated by them. When they grow outside the bones they are generally fastened to the subjacent bone-wall by outgrowths of new bone; the periosteum, greatly overgrown, invests them, and prolongations from it towards the bone appear to intersect and divide them into lobes. When they grow among soft parts they have a well-formed fibro-cellular or tougher fibrous capsule, which is commonly more dry and glistening than that of most innocent tumours.

Their rate of growth is singularly uncertain. They may increase very slowly. I have seen one not more than half an inch long which had been at least four years in progress. Or, after a certain period of increase, they may become stationary; as often happens in the tumours that occur in large numbers on the hands. Or, from beginning to end, their growth may be very rapid. I remember a man, about forty years old, in St. Bartholomew's Hospital, in whom, within three months of his first noticing it, a cartilaginous tumour increased to such an extent that it appeared to occupy nearly the whole length of his thigh, and was as large round as my chest. He had a pale unhealthy aspect, and suffered much from the growth; and its size and rapid growth, the tension nearly to ulceration of the skin over it, the enlarged veins, and loss of health, made all suppose it was a great malignant tumour. Mr. Vincent, therefore, decided against amputation of the limb, and the patient died exhausted within six months of the appearance of the disease. The examination after death proved that a great cartilaginous tumour, with no appearance of malignant disease, had grown within and around the middle two-thirds of the femur. The bone, after extension by the growth within it, had been broken, and all the central part of the tumour was soft, nearly liquid, and mixed with fluid blood and decolorised blood-clots.

The principal defect or degeneration noticeable in cartilaginous tumours is manifest in their being extremely soft, or even liquid,—a clear, yellow, jelly-like, or synovia-like material appearing in the place of cartilage. I call it a defect or a degeneration, because it is not always certain whether it is the result of cartilage, once well-formed, having become soft or liquid, or whether the soft or liquid material be a blastema which has failed of gaining the firmness and full organization of cartilage. The condition in which it is sometimes found can leave little doubt, I think, that it is often a degeneration,—a liquefaction of that which was once more perfectly nourished; but in other cases we have no guide to its interpretation, and it is quite probable that the same defective structure would be found in arrests of development as in degeneration.

Particular illustrations of cartilaginous tumours connected with the several bones of the limbs, jaws, cranium, and spine.—It may serve for additional illustration of this general pathology of cartilaginous tumours, if I describe now some particular forms of them.

I have said that they affect particularly the bones. The bones of the hands are their most frequent seats, and next to these, the adjacent extremities of the femur and tibia, the parts which, for some inexplicable reason, appear to have in all the skeleton the least power of resistance of disease. After these, the humerus, the last phalanx of the great toe, the pelvis, and the ribs, appear most liable to cartilaginous growths; after these, the number of cases is as yet too small to

assign an order of frequency, but there is scarcely a bone on which they have not been seen.

Of the cartilaginous tumours of the large long bones I need say little, having drawn from them the greater part of the general description. Only, the relations of the growths, according to the part of the bone in or near which they lie, may be worth notice.

When, then, the tumour grows at or about the articular end of a large long bone, it is almost always placed between the periosteum and the bone. Here it usually surrounds the bone, but not with an uniform thickness; and the thin wall of the bone wastes and gradually disappears as if it were eroded, or as if it changed its form, becoming cancellous, and then growing into the tumour, as I have already described. I have never seen such a tumour encroaching on the articular surface of a bone. But it may grow up all about the borders of the joint, and surround them. A striking example of these relations of the cartilaginous tumour to the bone on which it grows is in one of the finest specimens in the Museum, a cartilaginous tumour of the humerus, removed in an amputation at the shoulder joint by Mr. Liston. The patient was a naval surgeon, and the tumour had been growing for nearly forty years. The mass it now forms is nearly ten inches across; it surrounds the upper three-fourths of the shaft of the humerus, and nearly surmounts its articular surface. The abundant isolated nodules, the partial central ossification and central softening, the growth of bone from the cancellous tissue of the humerus into the tumour,—all these, and many other of the general statements I have made, are here well shown.

It is extremely rare, I think, for a cartilaginous tumour to grow within the articular end, or in the medullary tissue near it, in a large long bone. Here is, however, a striking specimen presented by Mr. Langston Parker to Mr. Stanley. It was removed by amputation of the lower part of the leg, from a young gentleman in whom it had grown slowly, and had distinctly pulsated. The lower end of the fibula is expanded and wasted by a growth of cartilage, mixed with what appears to be fibro-plastic tissue. The growth is rather larger than an egg, and is invested by the remains of the expanded fibula, and by the periosteum; and the relations of the chief blood-vessels make it probable that the pulsation felt during life must have been derived from that of the vessels within the tumour.

When a cartilaginous tumour grows at the middle of the shaft of a large long bone, it is, I think, usual to find coincidently both an external and an internal growth. Cartilage lies outside the shaft, beneath the periosteum; and another mass may fill the corresponding portion of the medullary canal. Then, in the concurrent growth of the two masses, the wall of the bone between them wastes or is broken up, and they may form one great tumour set between the ends of the shaft. These are the cartilaginous tumours which most imitate the progress of malignant disease. They are indeed very rare; but the chance of the existence of such an one where we might be anticipating a malignant tumour, is always to be added to the motives for amputation in cases of tumours round the shafts of these long bones.

When cartilaginous tumours grow at the attachment of tendons (and they often do so, especially about the lower part of the femur), they are peculiarly apt to acquire narrow bases of attachment. In these cases one usually finds a layer of cartilage incrusting some cancellous and medullary bone, and the bone, narrowing itself, extends into continuity with the wall or the cancellous tissue of the subjacent shaft. Such tumours have, then, the characters of polypoid outgrowths from the bone, and may be treated accordingly; for, when cut or broken off, their stems (at least, if they consist of only bone) will not grow. Indeed, this stem may chance to be unwittingly broken, as in a tumour removed by Mr. Lawrence. It had grown on the inner and lower part of the femur, and, when fairly exposed, was easily detached without further cutting: the narrowest part of its stem rested in a slight depression in the femur, but had no connexion by tissue with it. It seemed as if the narrow pedicle of a tumour, so large as this was, had been by accident broken off, and that friction of the broken surfaces had smoothed and fitted them together.

Such are some of the chief facts to be noted about the cartilaginous tumours on the large long bones.

On the jaws these tumours are, I believe, very rare. I know but one specimen

on the upper jaw alone,—a great tumour, portions of which are preserved in the Museum of Guy's Hospital, and of which the history, by Mr. Morgan, is in the Hospital Reports.

On the lower jaw such tumours appear prone to acquire a peculiar shape, affecting the whole extent of the bone. One of the most remarkable tumours in the Museum of the College is of this kind. The patient was a lady thirty-nine years old. The tumour had been growing eight years; it commenced as a small hard tumour just below the first right molar tooth, and gradually enlarged till it inclosed the whole jaw, except its right ascending portion. It measured two feet in circumference and six inches in depth, and the patient died exhausted by want of food, which she was unable to swallow, and by the ulceration of parts of the tumour during the last two years of her life.

M. Lebert has recorded a case in which a tumour like this was removed by Dieffenbach. In three successive operations he removed it by instalments, and the patient finally recovered.

The cartilaginous tumours that grow about the cranial bones and the vertebræ show, in a marked manner, that reckless mode of growth (if I may so speak) which is more generally a characteristic of malignant tumours. They grow in every direction; pressing, and displacing, and leading to the destruction of important parts, and tracking their way along even narrow channels.

Here, for example, is a tumour, composed for the most part of cartilage, which grew in connexion with the bones of the face and head of a lad sixteen years old. It involved both superior maxillary bones, extended into the left orbit, and through the left side of the base of the skull into its cavity, compressing the anterior lobes of the cerebrum: it was also united to the soft palate, and protruded the left nostril, and the integuments of the face.

The commencement of a similar growth is probably shown in a specimen, in which, together with changes effected by the growth of nasal polypi, one sees the ethmoid cells completely filled with firm semi-transparent cartilage, a mass of which projects in a round tumour into the upper part of the left nasal fossa.

And here I may adduce, in proof of the tracking growth of the cartilaginous tumours, the case of one originating in the heads of the ribs, which extended through the invertebral foramina into the spinal canal, where growing widely, and compressing the spinal cord, it produced complete paralysis of the pelvic organs and the lower extremities.—*Med. Gazette, Aug.* 8, 1851, *p.* 221.

Glandular tumours.—Occurrence in connexion with the mammary, labial, thyroid, and prostate glands—Relation to proliferous cysts—Mammary Glandular tumours —usual seat and relations—chief varieties of apparent structure—Labial and Prostatic Glandular tumours.—[Mr. Paget proceeds now to the discussion of glandular tumours. First, of their definition, he says,]

We may call the tumours "glandular" that, in their structure, imitate the glands, whether the secreting glands, or those organs which we name glands, because, though having no open ducts, they are of analogous structure.

The most frequent example of these glandular tumours is the kind which imitates, and occurs in or near, the mammary gland; the chronic mammary tumour of Sir A. Cooper; the pancreatic tumour of Mr. Abernethy; the fibrous tumour of the breast of M. Cruveilhier. Other tumours of the same general kind are more rarely found in the lips, and in or near the prostate and the thyroid glands. Probably, too, some other tumours, to which no name, or a wrong one, has been hitherto assigned, may yet have to be placed in this group; indeed, I think it very probable that there are certain lymphatic gland-growths which we usually regard as enlarged glands, but which are really of the nature of tumours, even in the most limited sense of the term. At present, however, I will speak of only such gland-tumours as may be clearly recognised,—namely, the mammary glandular tumour, the labial, and the prostatic. I have already spoken of the thyroid, and of those which may imitate the parotid.

Some of the pathology of these tumours has been already sketched in the account of the glandular proliferous cysts. To that account I may again refer, so far as to the point at which it is believed that an intra-cystic growth has completely filled the cyst in which its growth began, and has coalesced with the walls, so as to form a solid tumour.

Now, it is, perhaps, probable that all glandular tumours may be formed after this plan: for, in those occurring in the breast, we find sometimes one circumscribed mass composed half of a proliferous cyst, and half of a solid glandular tumour; sometimes two such growths lie apart, yet in the same gland; and often, we find such structures as we doubt whether to call proliferous cysts nearly filled, or mammary tumours.

However, if all the mammary and other glandular tumours are thus of intra-cystic origin, it must be admitted that many of them must very early lose the cystic form, and continue to grow as solid masses; for we find them solid even when they are very small, and they are traced growing from year to year, yet apparently maintaining always the same texture.

I shall speak now of the solid tumours alone; and, first, of the Mammary Glandular tumours.

Sir Astley Cooper may be said to have had a good insight into their nature, when he called them "chronic mammary," and said they were "as if nature had formed an additional portion of breast, composed of similar lobes." But I believe nothing more than this general likeness has been observed, till these tumours were examined with the microscope by M. Lebert, who found in them the minute glandular structure imitative of the mammary gland, and recognised many of their relations to the proliferous cysts. Mr. Birkett, by independent and contemporary observations made on the great collection of these tumours in Guy's Hospital, confirmed and extended the conclusions of M. Lebert, and has cleared up much of the obscurity that existed previous to his inquiries. But these gentlemen apply such terms as "Imperfect Hypertrophy of the mammary gland" to these tumours: but highly as I esteem their observations (and not the less, I hope, because they corrected errors of my own), I would rather not adopt their nomenclature, since if we do not call these "tumours," I hardly know to what innocent growths the term could be applied. Nearly all innocent growths are imperfect hypertrophies, in the same sense as these growths are; nay, these are, in many respects, the very types of the diseases to which the name of tumours is by general consent ascribed, and which can be distinguished, even in definition, from what are more commonly regarded as hypertrophies.

The mammary glandular tumours may be found in any part of the breast,—over, or beneath, or within the gland, or at its border. Their most rare seat is beneath the gland; their most common at its upper and inner part, imbedded in, or just beneath, its surface. They are usually loosely connected with the gland, except at the deepest part, where their capsules are generally fastened to the gland; but the connexion is of so small extent that they slide very easily under the finger, and are peculiarly moveable in all directions.

The tumour is commonly of oval shape; superficially, or sometimes deeply lobed, or nodular; firm, or nearly hard, elastic, and often feeling like a cyst tensely filled with fluid. The parts around appear quite healthy. The mammary gland is pushed aside; but it undergoes no other change than that of atrophy, even when stretched over a tumour of the largest size. The skin under distension may grow slightly livid, but else is unchanged. The tumour is usually invested with a complete capsule, isolating it from the surrounding mammary gland, and often adhering less to it than to the gland. This capsule may appear only as a layer of fibro-cellular tissue, like that round any other innocent tumour; but it is not unfrequently more perfectly organized in layers, and smoother on its inner surface; conditions that we may perhaps ascribe to its having been a perfect cyst within which the glandular growth originated, and which it only lately filled.

On section, these tumours present a lobed construction, in which it is sometimes not difficult to discern the remains, or the imitation of the plan of the lobed, and foliated and involuted intra-cystic growths. In some, the fibro-cellular partitions among the lobes converge towards the centre of the mass, as if they were the remains of clustered cyst-walls; or there may remain a cavity in the centre of the tumour, as if clustered cysts and growths had not quite filled up the space. In some, however, no such plan is discernible; the whole mass is disorderly lobed, and its lobes have the shapes derived from accidental mutual pressure, and are bounded by loose fibro-cellular partitions.

In structure, as in construction, these tumours may present several variations; but they may be artificially arranged in three or four chief groups.

Some are really very like the normal mammary gland in an inactive state. These have a pure opaque-white, and soft, but tough and elastic, tissue; they are lobed and minutely lobulated, with undulating white fibres. Such an one is well shown in a specimen from Sir Astley's Cooper's collection, in which, moreover, his injection of the blood-vessels shows a moderate vascularity, about equal to that of the surrounding normal gland substance.

We might take such as this as the examples of the medium form of this kind of tumour; and the other chief or extreme forms are represented by those which deviate from this in two directions. In one direction we find much softer tumours; these, though closely textured, are soft, brittle, and easily crushed; their cut surfaces shine, or look vitreous or half translucent; they are uniformly greyish white, or have a slight yellowish or pink hue, which deepens on exposure to the air; or they may look like masses of firm, but flickering jelly; and commonly we can press from them a thin yellowish fluid, like serum or synovia. Such as these have the usual lobed and lobular plan of construction; and I think the intersecting partitions commonly extend from a firm, fibrous-looking central or deep part, towards the circumference of the tumour.

In the other direction from the assumed average or medium form, we find firmer tumours. These have a drier and tougher texture; they are opaque, milk-white, or yellowish, like masses of dense fibro-cellular tissue, lobed, and having their lobes easily separable, as in this great specimen of seven pounds weight.

To such as these varieties we might add many, due not merely to intermediate forms, but to the degrees in which the intra-cystic mode of growth is manifested; or to the development of cysts, which may take place as well in this new gland-tissue as in the old; or to the various contents of these cysts, whether liquids or organized growths.

I believe we cannot at present always connect these various aspects of the tumours with any corresponding varieties in their histories. Neither, I think, have any investigations proved more of the corresponding varieties of microscopic structure, than that, as a general rule, but only a general one, the tougher any tumour is, the slower its growth has been, and the more it has of the fibro-cellular, mingled with its glandular, tissue; and that the more succulent and vitreous it is, the less perfectly is the glandular tissue developed, and the more rapid is the growth.

Respecting the origin of these tumours, little more, I believe, can be said than that, occurring most commonly in young unmarried or barren women, their beginning often seems connected with defective or disordered menstruation. The law which, if we may so speak, binds together in sympathy of nutrition the ovary and the mammary glands, the law according to which they concur in their development and action, is not broken by one with impunity to the other. The imperfect office of the ovary is apt to be associated with erroneous nutrition in the mammary gland.

Labial Glandular Tumours may be briefly described, for their general characters correspond closely with those of the foregoing kind; or, they may appear intermediate in character between the foregoing and those tumours which I described as lying over or near the parotid gland, and as consisting of mixed glandular and cartilaginous tissue. Their likeness to these tumours over the parotid was manifest to Mr. Lawrence, who has added to his account of the tumours by the parotid, the only case of labial glandular tumour that I have found on record.

Prostatic Glandular Tumours are examples of the abnormal growths by which tumours appear to be connected with simple hypertrophies of organs.

We owe to Rokitansky the knowledge that the tumours in the prostate gland, which were commonly, and till lately even by himself, regarded as fibrous tumours, are composed of tissues like those of the prostate gland. In enlarged prostates they are not unfrequently found. In cutting through the gland, one may see, amidst its generally lobed structure, portions which are invested and isolated by fibro-cellular tissue, and may be enucleated. Such portions have, I believe, been sometimes removed as tumours, or as portions of prostate-glands, in operations of lithotomy. They lie imbedded in the enlarged prostate, as sometimes mammary glandular tumours lie isolated in a generally enlarged breast. They look like the

less fasciculate of the fibrous tumours of the uterus; but, to microscopic examination, they present such an imitation of the proper structure of the prostate itself, that we cannot distinguish the gland-cells or the smooth muscular fibres of the tumour from those of the adjacent portions of the gland. Only their several modes of arrangement may be distinctive.

At present the examinations of these tumours have been too few to furnish a complete history of them: neither can I add any cases or references to specimens to those which were adduced in the first lecture. Indeed, at present, the chief or nearly the whole interest of these tumours lies in those relations to general pathology to which I then referred: their surgical relations have, at present, I believe, been scarcely studied.

Vascular or Erectile Tumours—Principal Varieties: arterial, venous, and capillary.—The *Erectile* or *Vascular Tumours* include most of the diseases which are described as vascular nævi, and of which the types are the subcutaneous nævi. Among them, also, are the growths to which John Bell gave the name of aneurism by anastomosis, and those which have been called Telangeiectasis.

The name "erectile tumour" has, of late years, come into general use, as expressing a principal fact concerning these diseases, namely, that many of them resemble very closely in their texture that of erectile or cavernous tissue. Mr. Humphry has, indeed, rightly objected to the use of the term, that these tumours present no imitation of the erectile tissue in the power of filling themselves with blood, as if by some internal force. But, since this power of the true erectile tissue depends as much on the accessory structures of nerves and muscles as on the tissue itself, we may perhaps apply the term "erectile" to the tumours, remembering only for this, as for other structures occurring in tumours, that the imitation of the natural tissue is imperfect, or partial. However, if any be scrupulous in the use of these terms, we may call these tumours vascular, or cavernous, or even Telangeiectasis.

The likeness which these tumours bear to the erectile tissue, as exemplified in the corpus cavernosum penis, is sometimes, in general appearance, perfect. A well-marked specimen is in the Hunterian collection; it was removed from under the lower jaw, and its cut surface displays a close network or sponge of fine, smooth, shining bands and cords, just like those of the corpus cavernosum penis, only less regular in their arrangement.

The essential structures of the disease are, according to these descriptions, derived from such a growth of blood-vessels, or rather of blood-spaces, that, in imitation of erectile tissue, the arteries are numerous but comparatively small, and, as we may believe, the capillaries or intermediate vessels open into veins so large, and so closely branching and anastomosing that scarcely any continuity of tube can be discerned. Thus the whole mass seems formed of cells or spaces, opening widely into one another: and no remains exist of the walls of the veins, or of the tissue naturally lying between blood-vessels, except those narrow bands and cords that bound and intersect the cell-like spaces.

But while this form of tumour, in which the erectile tissue is imitated, may be taken as, in some sense, typical, we find, on either side of it, deviating forms. In some instances, the enlargement of arteries far exceeds that of veins; the swellings pulsate, and are florid and over-warm, and the tissues forming them may appear, for a time at least, hypertrophied. Some, I think, have described such arterial tumours as formed by the convolutions of a single artery; but they seem more commonly to be due to the dilatation of many anastomosing and closely clustered arteries. Such was the case in an instance recorded by Mr. Coote: arteries of the lip, which, in their natural state, might not have had a greater diameter than a large pin, were dilated for about an inch of their course into sinuses or canals, and were equal in diameter to the adult radial artery. Similar to this was a very formidable case, lately cured by compression, under the care of Mr. Lloyd. The temporal, supraorbital, and occipital arteries, all exceedingly dilated and tortuous, converged to a large pulsating swelling over the sagittal suture.

On the other side are tumours formed mainly of overgrown, dilated, and accumulated veins. Arterial branches may, and I think usually do, pass into these; but some of these tumours seem wholly venous, as if all the dilatation of vessels were beyond the capillaries; and in these cases Rokitansky's expression is very appli-

cable, that the circulation through the tumour may be compared with that through a portal vein.

Hence, speaking generally, it may perhaps be rightly stated, that among these vascular or erectile tumours, that which is common to all is an over-extension of blood-vessels or blood-spaces within a circumscribed space. We may assume that in different cases the change may chiefly affect either the arteries or the veins; or that it may affect both in such proportions as to produce an exact structural imitation of the erectile tissue. Or, we may assume that, in all cases, the capillary blood-vessels are the chief seats of the dilatation; and that as they grow they may, according to the state of the circulation in them, and their relations to other blood-vessels, have the character of arterial or venous plexuses. This last interpretation is as consistent as the other with the observed appearances of the vascular tumours, and is more easily reconciled with a fact that may be occasionally observed; namely, that "a nævus, which seems at first to consist only of arteries, after a time begins to exhibit veins under and around it, which veins may ultimately compose the larger part of the tumour."

Whichever explanation we may adopt, the differences among these tumours naturally suggest that they should be called "arterial," or "venous," according to the character of vessels or of blood of which their mass consists. And a third intermediate form may pass by the name of "capillary," if it appear that the intermediate blood-vessels are the chief seat of dilatation and abnormal anastomosis.—*Med. Gazette, Aug.* 22*d*, 1851, *p.* 309.

155.—CASES OF EPITHELIAL CANCER.

Epithelial Cancer of the Tongue. Under the care of J. Ericsen, Esq.—[From the notes of Mr. Turle, the dresser of the patient, we have the following account of this interesting case.]

Maria Boyns, aged 69, thin and pallid, but not markedly cachectic, was admitted into University College Hospital, July 16, 1852. She had been an out-patient, under Mr. Marshall, for some months, on account of a gradually increasing tumour at the tip of the tongue, which she had first noticed as a firm pimple two years previously. It was nearly circular, an inch and a quarter across, and extremely hard. No actual ulceration existed, but its surface was smooth and red, and its edges very irregular. On the left side of the tongue, near the root, was a patch of superficial abrasion, the size of a shilling, presenting a healthy surface, and unattended by induration. None of the submaxillary glands were sensibly enlarged. She had lost all her teeth, and been restricted to soft food for a long time; her pulse was feeble, 96; and, during the last few weeks, her strength had perceptibly declined. The malignant character of the disease had been recognised from the first, and its removal recommended, but she had declined to submit to it; finding, however, that it increased in size, and was becoming the seat of aching pain, she was now anxious to get rid of it. As the indurated lump was the part alone productive of discomfort, and as the other patch possessed no cancerous characters, it was decided to remove only the former.

July 21st. A needle, armed with a double ligature of thin whip-cord, was passed through the middle of the tongue, a little behind the diseased mass, and the two halves of the string tied as tightly as possible on the opposite sides of the organ, so as to strangulate the whole of its distal portion. The operation was conducted under chloroform, and was productive of very slight hemorrhage.

22nd. She has slept well, and is able to take fluid food,—milk, eggs beat up in wine, etc.

23rd. The sloughy mass was removed by an incision just in front of the ligature, which caused no bleeding.

29th. The surface of the wound has now lost its sloughy character, and is covered with healthy granulations; her mouth feels much more comfortable than before the operation; she sleeps well, takes her food, and can articulate with tolerable plainness.

August 3. She is discharged, much pleased with the result of the operation. The end of the tongue presents a puckered and indurated cicatrix; the sore on its

side is just in the same state as before; she has now no pain whatever, sleeps well, and has decidedly improved in appearance.

Sept. 17th. The cicatrix is perfect, and much less indurated than it was a month ago, and she continues free from pain and in good health. On the right side of the tongue has appeared a superficial non-indurated ulceration, very similar to that previously noted on the left; they are both level with the surface, florid and granulating; they produce so little pain, that she did not know of the formation of the second.

For the removal of tumours of the tongue, the surgeon has choice of three methods, each possessing peculiar advantages:—amputation by the knife gets rid of the whole mass at once; strangulation by means of ligature prevents any loss of blood; excision performed carefully with a wire heated by galvanism accomplishes both these objects at the same time. As the latter instrument appears to be easily manageable, it is not improbable that it may, when better known, in a large proportion of cases, supersede the other two. It must, however, be admitted, that, unless handled carefully, and made to cut its way very slowly, the risk of bleeding is not obviated, as it is necessary to that effect that it should have time to *cauterise* the parts as it divides them.—*Med. Times and Gazette, Oct.* 16, 1852, *p.* 389.

Large Cancerous Sore on the Back of the Hand.—Amputation.—Recovery. Under the care of J. PAGET, Esq.—Patrick Keller, aged 62, a bricklayer's labourer, a thin, dry-fibred man, was admitted into St. Bartholomew's Hospital, July 1, 1852. The back of his left hand was covered by one large ulcer, which extended from side to side, and at each border turned round a little into the palm. Its margins were ragged, raised, and very firm, everted in some parts, and undermined in others, always abrupt. The surface was covered with florid granulations, discharging good pus, and was crossed in several parts by bands of commencing cicatrization. It had commenced a year and a half previously as a large and painful wart, in the middle of the back of the hand, which had continued to enlarge without ulcerating for a year, when he went into St. Giles's Workhouse, and had caustics applied, since which time the ulceration had rapidly spread. It appeared that he had been accustomed to be employed several days in each week in setting stoves and fireplaces, during which occupation his hands necessarily came in contact with much soot.

Excepting some parts of its border, this sore presented none of the usual features of a malignant one; its base was in fact healthy, and even in process of cicatrization, and in no part was there deposited anything like a defined mass of induration. Its appearance had, however, been masked by repeated escharotic applications; and, during the fortnight that he was kept under observation previous to the operation, it assumed more of its proper characters. Continuing to spread rather rapidly, it had in that time crept further round the inner border of the palm, and the appearance it here presented was decisive. The edge was elevated, sinuous, everted, and very firm; the surface covered with a greyish secretion, and destitute of granulations. It was decided to remove the whole hand.

July 16. A double-flap amputation was performed in the lower third of the forearm. No unusual circumstances attended the operation, and the process of healing, although it progressed very slowly, was not accompanied by any unfavourable occurrences. The juice scraped from the cut edges of the ulcer exhibited the microscopic characters of epithelial cancer.

Chimney-Sweep's Cancer Affecting Primarily the Inguinal Glands—Excision—Recovery. Under the care of J. PAGET, Esq.—It is customary to attribute the form of cancer so commonly occurring in chimney-sweeps, to the local irritation of the soot to which they are exposed. Thus the reason of its preference for the scrotum is found in the peculiar rugose condition of the skin of that part being well calculated to lodge and retain the irritating particles. To this view it may be objected, that the disease is, in some stages at least, evidently a constitutional one; that it will break out in those who have long abandoned the trade; and that a tendency to it appears to be capable of transmission from father to son, as it occasionally occurs in individuals of the latter class, who have themselves been little, if at all, exposed to the influence of soot. Then, again, its prevalence appears to be almost restricted to a few English cities; and it is not known among certain large classes

of men who are constantly exposed to one or other kind of carbonaceous dust. These facts are calculated to suggest the inquiry as to whether the influence exerted by this trade may not be of a more general character,—that is, whether the filth, the degraded habits common amongst these men, the inhalation of noxious matters, &c., may not conjointly effect such a deterioration in the constitutional power of the exposed individuals, as to render them peculiarly liable to the supervention of malignant diseases. If this were granted, it would be easy to account for the preference shown by the disease for a part which is constantly exposed to irritation amply sufficient to localise its outbreak. To suppose soot capable of originating, merely by its mechanical action, a specific and malignant disease, is certainly to endue it with powers such as no other substance is known to possess. In reply to this, it might, however, be urged that chimney-sweep's cancer is often of not nearly so virulent a character as the other forms of the disease, that it may be excised with good hopes of securing to the patient a long period of health, and that, in short, it does frequently appear to be really a local, rather than a constitutional affection. It might also be alleged, that it is not uncommon for a disease at first purely local, (syphilis for example,) to contaminate the system generally, and become capable of being transmitted to the offspring. We have not space here to enter fully on the question, and shall abstain from giving any definite judgment on it, as it is our wish rather to record facts than hastily to pronounce opinions. On each side facts may be cited, and the above case appears to bear in a different direction from the one which is to follow. In that just related, a man, engaged in an occupation which, whilst not of itself prejudicial to health, necessitated the exposure of his hands to the irritation of soot and rubbish, had a cancerous wart form on the very part thus exposed. In the following one, however, a chimney-sweep, in whom there was no reason to suspect hereditary predisposition, was attacked by primary epithelial disease in parts which, from their subcutaneous situation, could not possibly have been subjected to the mechanical irritation of soot. The latter, if not an unique case, is at least one of extremely rare occurrence; were it otherwise, the truth of the principle would be nearly established, that the peculiar influence which this unfortunate trade exerts, is a constitutional, and not a purely local one.

William Isaacs, aged 48, a thin and cachectic-looking man, who had been for forty years constantly employed in sweeping chimneys, but whose father had not followed that trade, was admitted August 10, 1852. In his right groin was a large ulcer, with ragged and sinuous edges, covered with firm sprouting granulations, and discharging a thick dirty secretion. The glands below and around it were enlarged, and of extreme induration. In the left groin was a cluster of glands the size of an egg, swollen, and very hard, but not ulcerated. He stated that his attention had been first drawn to the disease by severe pain in the right groin four months ago, when he found a small lump so hard that he thought it was bone, which adhered to the skin, but did not involve it. It gradually increased in size, and occasioned him such severe pain that he had latterly been obliged to keep his bed. Having slowly suppurated and become prominent, it broke about a week before admission, and discharged a small quantity of thick glutinous stuff, after which the pain was much relieved. The enlargement in the left groin had only been noticed for three weeks. Respecting the place of the first occurrence of the disease, he expressed himself as quite certain that he had not had any wart or ulceration on any other part, and careful examination revealed nothing calculated to throw doubt on his statement. The skin of the scrotum was remarkably clean and soft; and although, in several parts of the body, especially the face, the skin was rough, and covered with little firm papules, yet nowhere was there anything amounting to a wart.

August 14. Mr. Paget removed the diseased parts from each groin. Those on the right side required a long and careful dissection, as they ran deeply and lay close to important structures. The wound left was consequently a very large one.

17th. He still suffers considerable pain, though not nearly so much as before the operation. He is very feeble, and looks ill.

℞. Quin. disulph. gr. j., acid. sulph. dil. ℥x., aquæ puræ ℥j. ter die.

℞. Tinct. opii ℥xx. o. n.

Sept. 2. A mass of firm sprouting granulations, of very suspicious appearance,

having sprung up in the centre of the right wound, it was treated with a paste composed of equal parts of zinc and flour.

Rep. haust.

12th. The application of the caustic gave him great pain for twenty-four hours, but he has since been much more comfortable; sleeps well, and is steadily improving. The wounds are healing, and look satisfactory.

Oct. 2. He has gained flesh and colour considerably. The wound in the left groin is all but healed, and that in the right is much contracted and covered with healthy granulations. He sleeps well, and suffers no pain whatever, and there appears every reason to believe that the process of cure will soon be completed.

The above case affords much encouragement to the practice of excising glands under similar circumstances; for since it was at first very doubtful whether it were practicable to remove the whole diseased parts, the result has been highly satisfactory, and the more so because, from the rapid progress which the disease was making, it must evidently have soon induced a fatal termination. The case is very interesting, not only as affording an example of chimney-sweep's cancer affecting a part to which soot could not possibly have been applied, but also of malignant disease primarily occurring in the lymphatic glands, both of which phenomena are extremely rare.

Chimney-Sweep's Cancer three times excised—Return in the Inguinal Glands—Excision—Recovery. Under the care of E. STANLEY, Esq.—John Britton, aged 40, the son of a chimney-sweep, and himself brought up to the trade from the age of five years, was admitted into St. Bartholomew's Hospital, May 14th, 1852. He stated that, when twenty-one years old, a large, ragged soot wart made its appearance on his scrotum, which, after having lasted a year, and become extremely painful, he cut off himself with a razor. Much alarmed lest it should return, he soon afterwards abandoned his business, and became a street-hawker, and was never after in the least exposed to soot. This change of life, however, did not prevent the return of the disease, which took place about six years afterwards, and was, after having lasted near two years, and formed a large ragged ulcer, again excised by Mr. Lawrence. Five years after this, it again returned, but spread so slowly, that he did not think it worth while to submit to operation until a year ago, when it was again cut out by Mr Lloyd. Hitherto the scrotum had been the only part affected, and all the operations had been rapidly recovered from; two months after the last, however, the inguinal glands on both sides began to enlarge, and have continued to increase up to the present time. In each groin there were now several tumid glands, those on the left side being the most advanced; one of which had softened, and presented the sense of fluctuation. It differed, however, from an ordinary bubo, in being more conical and projecting, and in having around it less of diffused swelling and redness, while its circumscribed induration was much more extreme. On being punctured, a few drachms of thick, greyish, pultaceous matter were squeezed out, which contained great numbers of large, oval, very granular, epithelium scales, but none of the ordinary pus cells. The glands on the right side were merely indurated, without any softening.

On May 15th, Mr. Stanley dissected out the diseased glands, together with portions of the surrounding tissues which had been implicated with them. In each side the gland structure was infiltrated with epithelial deposit. The wounds, though large, healed favourably, and he was discharged in a few weeks quite well.

Epithelial Cancer of the Penis.—Amputation.—Recovery.—Under the care of J. PAGET, Esq.—John Vincent, aged 33, a farrier, stout, muscular, and, excepting a slight pallor, healthy looking, was admitted July 27, 1852, on account of a disease which presented the following appearances:—Over the base of the glans penis, a little to the right side, was a large ulcer, which perforated the prepuce, and exposed the corona glandis. Its edges were sinuous, everted, much raised, and overhanging a marked constriction which surrounded their base. They, as well as the portion of glans which projected into the sore, were covered with firm, sprouting granulations, almost resembling small warts. The prepuce was in a condition of congenital phymosis, and it, together with the integument of the penis, was acutely inflamed and much swollen. Above the ulcer, on the body of the penis, were several small, isolated collections of unhealthy pus, over which the skin was livid. The whole was extremely sore and tender to the touch. There were no enlarged glands

in either groin, and the odour exhaled from the ulcer was very little, if at all, fetid.

The history he gave of the affection was, that three months previously, while suffering from a slight gonorrhœa, he received a bruise on the penis from a horse which he was shoeing, and, three weeks after this accident, he first noticed that the prepuce on the right side was somewhat elevated by a soft swelling beneath it. In a little time general inflammation of the whole foreskin was induced, and ultimately ulceration took place over the growth on the glans, by which the latter was brought into view; this event occurred about three weeks before admission. During the last week or two the pain and soreness had been considerable, but up to that time he had lived as usual, and repeatedly exposed himself to the risk of venereal contagion.

Here, then, a most important question of diagnosis arose, viz., was the disease cancerous or syphilitic? The age of the patient, the entire absence of cachexia, the short time which the disease had lasted, the acutely inflamed and almost sloughing condition of the parts, and the fact that, whilst both glans and prepuce were equally implicated, they had not adhered together, all seemed opposed to the idea of its being malignant. On the other hand, not a single symptom of constitutional syphilis could be detected, and the character of the firm sprouting granulations was such as is very rarely met with in the latter disease, in which warts, when present, are commonly seated on a sound surface, and seldom or never coexist with acute ulceration.

The congenital phymosis, whilst notoriously favourable to the growth of cancer, might also, from its allowing of the retention of irritating secretions, serve to render a venereal sore much more virulent than usual. Previous to admission, he had been treated for syphilis, and neither himself nor his surgeon had suspected that the disease had any other character.

A consultation was held, in which Messrs. Stanley, Lloyd, and Paget took part. It was decided to lay the diseased parts freely open, as they were evidently suffering much from inflammatory tension. On splitting up the prepuce, its lining and the greater part of the corona glandis were found to be extensively ulcerated, and covered with the sprouting, wart-like granulations before mentioned. A slice of the prepuce having been removed and subjected to microscopic examination, large quantities of common exudation corpuscles were found, and only two or three epithelium scales of suspicious character, being less angular, having more granular matter and less distinct nuclei than healthy ones. Still, there was not sufficient conclusively to decide the question; and, although the opinion of all who saw it was strongly in favour of the malignant nature of the disease, yet it was thought best to give the poor fellow the chance afforded by a trial of anti-syphilitic remedies before resorting to such a serious procedure as the amputation of the whole organ.

℞. Potassii iodidi gr. iij., decoct. sarzæ co. ℥ i. ter die.

August 10. The inflammation has subsided, and the swelling is diminished; the ulceration has, on the contrary, extended, and is still more closely covered by the warty granulations; which are firmer and dryer than before. The folds of the prepuce lodge a fetid and ill-formed discharge. He does not suffer much pain, but a constant and very troublesome itching, which has obliged him to take morphia each night in order to procure sleep.

Mr. Paget again removed a small portion of prepuce, and examined it with the microscope. The appearances which had before been masked by the abundance of inflammatory products were now evident, and there remained no doubt as to its being a genuine epithelial cancer. Amputation of the penis was accordingly proposed to the patient, which he after some hesitation assented to.

15th. The skin of the penis having been drawn as much forward as possible, and the organ being grasped firmly in the blunt blades of an instrument for the purpose, the whole was severed at a single sweep of the knife within an inch of the pubes. The skin at once retracted, leaving the uncovered corpora cavernosa projecting prominently forwards. A few ligatures were applied, and the part covered with a wet rag.

On examining the removed parts, the prepuce, glans, and corpora cavernosa, to within half an inch of the incision, were found to be infiltrated with the deposit of epithelial cancer. It is perhaps scarcely necessary to remark, that the object

in dividing the skin as far back as possible was to prevent it, during the healing process, from closing over the end of the stump and occluding the orifice of the urethra. In amputation of an extremity, no result is more deprecated than a conical stump; in the case of the penis, however, that condition is most desirable, and the rules for the performance of the two operations are consequently reversed. The incision through the skin should, in the latter, be as far back as possible; while, as is well known, in the former it can scarcely be made too forward.

Sept. 5. The healing process has progressed favourably, and is now very nearly complete. The orifice of the urethra now projects, and its lips are everted and pouting in the best possible way. He has had no difficulty in voiding his urine, has been quite free from pain and itching ever since the operation, and appears to be in good health.—Discharged.

This case furnishes another instance of the association of cancer of penis with congenital phymosis. Their very frequent concurrence has been noted by all who have recorded observations on the subject. Hey observed it in nine out of twelve examples of the disease which fell under his notice—a proportion very great, indeed, when we consider that the malformation is, after all, not a common one. Mr. Travers has thrown additional light upon the subject by showing that Jews are very rarely indeed the subjects of cancer penis. Now, if it be remembered that the disease, when once begun, is almost necessarily fatal, and that, too, very rapidly; that the part is one in which operations are perhaps of less benefit in protracting its course than in most others; and that one of the most recent and trustworthy authors on the subject states that he can find "no recorded case of permanent recovery after amputation of the penis for unquestionable cancerous disease," we think it will be admitted, that as the disease is one which we cannot triumphantly cure, there would be nothing very unseemly in condescending to try means of prevention. The connexion between the malformation and the disease is so palpable, that were cancer penis as common as small pox, no doubt but that, before this, some public provision would have been made for the circumcision of every elongated prepuce. Does, then, its rarity constitute any good reason why this simple precaution should be neglected? The operation is totally devoid of danger, and if performed in infancy, is attended with but little inconvenience. If those engaged in the practice of obstetrics would undertake the matter, we feel sure that their trouble would meet a full reward, in the consciousness, that, however unable to recognise the exact instances, they were yet most certainly the means every now and then, of preserving a fellow-man from a disease attended with peculiar misery, and resulting in a very painful death.

We may illustrate the way in which the disease usually kills, by reference to a case recently under the care of Mr. Lawrence. A man, aged 61, the subject of congenital phymosis, was attacked in 1847 with cancer of the glands. In July, 1851, amputation of the part was performed; and in March, 1852, after great suffering, he died with a return of the disease in the glands of the thigh and groin. His case furnished no exception to the general rule, that the progress of malignant diseases is slow in proportion to the age of the patient.

The importance and occasional difficulty of diagnosing between cancerous and venereal ulceration of the genitals will be generally admitted. The presence in the former, of firm sprouting cauliflower-like excrescences, is undoubtedly a most valuable sign; but the use of the microscope should never be omitted in doubtful cases. By its assistance, the conclusion was arrived at in the one just related, and there is another at present under treatment in the hospital, and which for that reason we shall not now give in detail, in which its evidence was equally important.

A woman, aged 39, was admitted into the Foul Ward, on account of a painful, superficial ulcer, of a horse-shoe shape, extending across the pubes and down each labium, and attended by a large bunch of warts on the inner side of the left thigh. The disease appeared to have been preceded by a sharp gonorrhœa; and for some weeks no doubt was entertained as to its venereal character. The growth of firm warty granulations around the edge of the sore, however, excited suspicions, and, a portion having been removed for microscopic examination, an epithelial structure was easily recognised. It was then observed, that over the surface of the sore and the surrounding warts the hairs of the part still grew in a natural manner. Whether any importance could be attached to this circumstance as a point of dia-

gnosis we are not prepared to say; but such a state is certainly not common on syphilitic ulcerations, however superficial.—*Med. Times and Gazette, Oct.* 23, 1852, *p.* 414.

156.—ON THE MEDICAL TREATMENT OF INSANITY.

By Dr. Forbes Winslow.

[The following is a brief outline of Dr. Winslow's views on the pathology and medical treatment of insanity:]

It is necessary that we should, before being able to appreciate the effect of medical treatment, entertain just and enlightened views as to the *curability of insanity.* I now speak from a somewhat enlarged experience, from much consideration of the matter, and I have no hesitation in affirming that, if brought within the sphere of medical treatment in the earlier stages, or even within a few months of the attack, insanity, unless the result of severe physical injury to the head, or connected with a peculiar conformation of chest and cranium, and an hereditary diathesis, *is as easily curable as any other form of bodily disease for the treatment of which we apply the resources of our art.* It is a lamentable error to suppose, and a dangerous, a false, and unhappy doctrine to promulgate, that the disordered affections of the mind are not amenable to the recognised principles of medical science. I again declare it to be my positive and deliberately formed opinion, that there are few diseases of equal magnitude so susceptible of successful medical treatment in the incipient form as those implicating the normal action of thought. The vast amount of incurable cases of insanity which crowd the wards of our national and private asylums, is pregnant with important truths. In the history of these unhappy persons—these lost and ruined minds—we read recorded the sad, melancholy, and lamentable results of either a total neglect of all efficient curative treatment at a period when it might have arrested the onward advance of the cerebral mischief, and maintained reason upon her seat; or of the use of injudicious and unjustifiable measures under mistaken notions of the nature and pathology of the disease. In no class of affections is it so imperatively necessary to inculcate the importance of early and prompt treatment, as in the disorders of the brain affecting the manifestations of the mind. I do not maintain that our curative agents are of no avail when the disease has passed beyond what is designated the "curable stage." My experience irresistibly leads to the conclusion that we have often in our power the means of curing insanity, even after it has been of some years' duration, if we obtain a thorough appreciation of the physical and mental aspects of the case, and perseveringly and continually apply remedial measures for its removal; but I cannot dwell too strongly upon the vital necessity of the early and prompt exhibition of curative means in the incipient stage of mental derangement.

I believe insanity (I am now referring to persistent insanity, not those transient and evanescent forms of disturbed mind occasionally witnessed) to be the result of a *specific morbid action of the hemispherical ganglia, ranging from irritation, passive and active congestion, up to positive and unmistakable inflammatory action.* This state of the brain may be confined to one or two of the six layers composing the hemispherical ganglia; but all the layers are generally more or less implicated, in conjunction with the tubular fibres passing from the hemispheres through the vesicular neurine. This specific inflammation, from its incipient to the more advanced stage, is often associated with great vital and nervous depression. It is, like analogous inflammation of other structures, not often accompanied by much constitutional or febrile disturbance, unless it loses its specific features, and approximates in its character to the inflammation of active cerebritis or meningitis. This state of the hemispherical ganglia is frequently conjoined with active sanguineous circulation and congestion, both of the substance of the brain and its investing membranes. The morbid cerebral pathological phenomena—viz. the opacity of the arachnoid, the thickening of the dura mater, its adhesions to the cranium, the depositions so often observed upon the convoluted surface of the hemispheres, and on the meninges, the hypertrophy, scirrhus, the cancerous affections, the induration, the depositions of bony matter in the cerebral vessels and on the dura mater, the serous fluids in and the ulcerations upon the surface of the

ventricles, the alterations in the size, consistence, colour, and chemical composition of the vesicular neurine and fibrous portion of the brain—are all, in my opinion, the results, the sequelæ, more or less, of that specific inflammatory condition of the hemispherical ganglia to which I have referred. It does not necessarily follow that the *fons et origo mali* of insanity is invariably to be traced to the brain. The preliminary morbid action and irritation are often situated in the heart, the stomach, the liver, the bowels, the lungs, or the kidneys, the brain being secondarily affected; nevertheless, in all cases inducing actual insanity, the hemispherical ganglia are involved in the morbid action. The most recent pathological doctrine propounded to explain the phenomena of insanity—I refer to the views of a recent writer—that derangement of mind is the effect of "*loss of nervous tone*," and that this loss of nervous tone is "*caused by a premature and abnormal exhaustibility of the vital powers of the sensorium*"—conveys to my mind no clear, definite, or precise pathological idea. It is true that we often have, in these affections of the brain and disorders of the mind, "loss of nervous tone," and "exhaustion of vital power;" but, to my conception, these are but the *effects* of *a prior morbid condition of the encephalon*, the *sequelæ* of specific inflammation of the hemispherical ganglia. To argue that humanity is invariably and exclusively the result of "loss of nervous tone," is to confound cause and effect, the *post hoc* with the *propter hoc*; and would, as regards therapeutical measures, act as an *ignis fatuus*, alluring us as pathologists from the right and legitimate path. I feel anxious that my views upon this important subject should be clearly enunciated, and not open to misconception. I think much mischief has arisen from a belief in the existence of active ordinary cerebral inflammation in cases of insanity, for it has led to the adoption of treatment most destructive to life, and has seriously interfered with the permanent restoration of the reasoning powers. Nevertheless, insanity is occasionally complicated with acute cerebral symptoms sufficient to justify us in the cautious use of somewhat active measures for its removal. We must avoid the fatal error of a too rapid process of generalization, and be careful of not looking to symptoms instead of to the disease itself, and of permitting ingenious and well-constructed *à priori* theories of the nature of insanity to dazzle our imaginations and abstract the mind from the steady and patient investigation of pathological science and individual cases of disease. If we allow our judgment to be warped by the inflammatory theory on the one side, (I am now speaking of *ordinary*, not of *specific* inflammation,) and conclude that the excitement of mania is to be subdued by copious depletion or the administration of antiphlogistic measures,—or if, on the other hand, we adopt the speculative opinions of those who believe that, in every case of insanity, irrespectively of its origin, its progress, or its character, there exists "mere loss of nervous tone," caused by "a premature abnormal exhaustibility of the vital powers of the sensorium,"—how lamentably shall we be misled as to the real character of insanity, and in the application of our therapeutic agents! These circumscribed and partial views of the pathology of insanity, often, alas! lead to serious solecisms in practice. In ninety per cent. of the cases of acute mania there is found in the brain and its meninges a state of sanguineous congestion, particularly of the hemispherical ganglia, combined with alterations in the grey nervous matter. In forming an opinion of the actual pathological condition of the cerebral substance, we should remember that, particularly in public asylums, it is a rare occurrence for recent cases to be admitted; that the acute and sub-acute active cerebral conditions have subsided, and the disease has assumed a chronic form, before the patient is examined and placed under treatment; consequently many deductions recorded by pathologists have been based upon the study of chronic, and not of acute mania. A large per-centage of the cases, before admission into our national asylums, have passed through the primary and acute stages, and have probably been subjected to medical treatment. This fact must never be lost sight of in forming our opinion, not only of the nature of the disease itself, but of the medical treatment necessary for its cure. In private practice the acute forms of insanity are often met with; but even with the advantages which the physician can command, of investigating the earlier stages of deranged mind, he often discovers that the mental affection has been allowed to exist and slowly progress for a considerable period, no treatment, either medical or moral, having been adopted for its removal. In the incipient form of insanity, particularly when it manifests itself in plethoric

constitutions, has been sudden in its development, is the result of physical causes, and is connected with the retrocession of gout, or is rheumatic in its character, there can be no doubt the nature of the changes induced in the brain is more allied to that of inflammation than that of nervous exhaustion. The attacks from the slow and insidious operation of moral causes are less likely to be accompanied by active symptoms. In many instances the maniacal excitement is *asthenic* or *atonic* in its character, resembling the delirium of the last stages of typhus fever.

The most simple classification of insanity, the one best adapted for useful and practical purposes, is its division into the *acute* and *chronic* forms; the insanity ushered in by *excitement* or by *depression* into *mania* and *melancholia*—*amentia* and *dementia*. The minute divisions and subdivisions, the complicated and confused classification to be found in books, may serve the ostentatious purposes of those desirous of making pompous display of scientific lore, but I think they have tended to bewilder and obscure the understanding of the student, and lead the man in search of practical truth from the investigation of the disease itself to the mere study of its symptoms, and to the consideration of unessential points and shades of difference. Adhering to this division of the subject, each form should be viewed in relation to its *complications*, as well as to its *associated diseases*. Among the former are epilepsy, suicide, homicide, paraplegia, hemiplegia, and general paralysis. The associated diseases implicate the lungs, heart, liver, stomach, bowels, kidney, bladder, and skin.

Before speaking of the preliminary examination of the patient supposed to be insane, and the prognosis in cases of insanity, I would premise that those inexperienced in the examination of this class of cases would often arrive at false and inaccurate conclusions, if they were not cognisant of the fact, that the insane often describe sensations which they have never experienced, and call attention to important symptoms which have no existence except in their own morbid imaginations. A patient will tell you that he has a racking headache, or great pain and tenderness in the epigastric region, both symptoms being the fanciful creations of his diseased mind. This is particularly the case in the hysterical forms of insanity, in which there always exists a disposition to pervert the truth, and exaggerate the symptoms. Again, serious bodily disease may be present, the patient not being sufficiently conscious to comprehend the nature of the questions asked, or able to give intelligible replies to the anxious interrogatories of the physician. Insanity often masks, effectually obscures, other organic affections, the greater malady overpowering the lesser disease. When Lear, Kent, and the Fool, are standing alone upon the wild heath, exposed to the merciless pelting of the tempest, Kent feelingly implores the king to seek shelter from the "tyranny of the open night," in an adjoining hovel; it is then that Lear gives expression to the psychological truth just referred to—

> "Thou think'st 'tis much that this contentious storm
> Invades us to the skin; so 'tis to thee;
> But *where the greater malady is fixed,*
> *The lesser is scarce felt;*
> * * * * The tempest *in my mind*
> Doth from my senses take *all feeling else*
> *Save what beats there.*"

Disease of the brain may destroy all apparent consciousness of pain, and keep in abeyance the outward and appreciable manifestations of other important indications of organic mischief. Extensive disease of the stomach, lungs, kidneys, bowels, uterus, and heart, have been known to have progressed to a fearful extent without any obvious recognisable indication of the existence of such affections. Insanity appears occasionally to modify the physiognomy and symptomatology of ordinary diseases, and to give them peculiar and specific characteristic features.

Again, it is necessary for the physician to watch the operation of medicine in masking important diseases. The different forms of narcotics, if given in heroic doses, often mislead us in our estimate of the nature of bodily diseases not directly connected with the mental affection. The most essential preliminary matters of inquiry have relation to the age, temperament, previous occupation, and condition in life of the patient. It will be necessary to ascertain the character and duration of the attack; to ascertain whether it has resulted from moral or physical causes; if of sudden, insidious, or of slow growth; whether it has an hereditary origin, or is the effect of a mental shock, or of mechanical injury; whether it is the first

attack, and if not, in what features it differs from previous paroxysms. It will also be our duty to inquire whether it is complicated with epilepsy, paraplegia, or hemiplegia, suicidal or homicidal impulses. If any prior treatment has been adopted, we must ascertain its nature; whether the patient has suffered from gout, heart disease, rheumatism, cutaneous affection, or syphilis. It is important in cases of females to obtain accurate information in relation to the condition of the uterine functions, and to ascertain the state of the moral affections. We should also inquire whether the patient has been suspected of habits of self-abuse. Having obtained accurate information upon these essential points, our own personal observation will aid us in ascertaining the character of the mental disturbance; the configuration of the head, chest, and abdomen; the gait of the patient, the degree of sensibility and volitional power manifested; the state of the retina, the pulse, the urine, and temperature of the scalp and body generally; the condition of the skin and chylopoietic viscera; the action of the heart, lungs, and nature of any existing disease of the uterus. If a patient complains of any local mischief, however imaginary it may appear to be at the time, it is essentially necessary that we should clearly satisfy our minds upon the point, before dismissing it as not entitled to serious investigation. A patient once bitterly complained of retention of urine; upon examination the bladder was found to be distended, and the man had passed no urine for twenty-four hours. I was about to introduce a catheter, when the patient burst into a fit of laughter, and immediately emptied his bladder. Esquirol relates a case of a merchant, who, whilst suffering from melancholia, declared that some foreign body was sticking in his throat. No notice was taken of this supposed fanciful idea. The patient died, and an ulcer was discovered at the upper third of the œsophagus. A patient complained of devils being in his stomach and bowels, and declared that they were acted upon by electric, magnetic agencies. After death he was found to have scirrhus of the stomach, and chronic inflammation of the bowels. A patient refused to eat; he said he could not swallow his food without great pain. As he had exhibited other symptoms of a disposition to suicide, it was thought by myself and others, that his obstinate refusal of food was associated with ideas of self-destruction. He died, and at the post-mortem examination a stricture in the pylorus was discovered. These illustrations, and they could easily be extended, will prove the importance of paying minute attention to particular delusions, with the view of ascertaining whether they have not a particular and *actual* physical origin.

The *prognosis* in cases of insanity will mainly depend upon the duration of the attack, its character and origin, and the diathesis of the patient. The prognosis is generally unfavourable if the disease is hereditary—if the symptoms are similar in character to those exhibited by other members of the family when insane. Insanity, accompanied by acute excitement, is, *cæteris paribus*, more easy of cure than when it has been of slow and gradual growth, and is marked by great mental depression. The prognosis is favourable in cases of puerperal mania; it is unfavourable when there exists a want of symmetry between the two sides of the head, with small anterior, and large posterior cerebral development. Any great inequality in the cranial conformation would be a suspicious indication. The existence of any malformation in the development of the chest is also an unfavourable sign, and would induce us to give a guarded prognosis. Dr. Darwin says, when a person becomes insane, who has a small family of children to absorb his attention, his prospect of recovery is but small, as it establishes that the maniacal hallucination is more powerful than those ideas which usually interest us most. The prognosis is unfavourable when patients are under the morbid delusion that they are poisoned, and are constantly suffering internally from peculiar sensations. Religious delusions are more difficult to eradicate than other morbid impresssions. The age of the patient will materially guide us in forming a correct prognosis. Hippocrates says the insane are not curable after the fortieth year; Esquirol maintains the greater portion recover between the ages of twenty and thirty; Haslam between the ages of ten and twenty. As a principle, we may conclude that the probability of recovery in any given case is in proportion to the early age, physical condition, and duration of the attack. When a patient has youth and a good constitution to aid him, and is advantageously placed, having at command remedial measures, and is excluded from all irritating circumstances, the prognosis may

be favourable. I have seen patients after the advanced age of sixty and seventy recover; and cases of cure are upon record where insanity has existed for ten, fifteen, and twenty years. In forming our prognosis, it is important to ascertain the educational training of the patient. Has he been in the habit of exercising great self-control? Has his mind been well disciplined? Has he kept in abeyance the passions, or have the motions and impulses of his nature obtained the mastery over him? He who has been taught to practise self-denial and self-control in early life, is, *cæteris paribus*, in a more favourable position for recovery than he who has permitted himself to be the willing and obedient slave of every passion and caprice. Insanity, accompanied with criminal propensities, is said to be incurable; because, as Ideler urges, such patients "cannot bear the torments of their consciences, and relapse into the stupefaction of insanity to flee from the consciousness of their guilt." The prognosis is unfavourable when the insanity is complicated with organic disease of the heart and lungs, with deafness, and paralysis in any of its forms. Lesions of the motor power are very unfavourable indications. Great impairment of mind, accompanied with delusions of an exalted character, and associated with paralysis, is generally incurable. Esquirol says, epilepsy, if associated with insanity, places the patient beyond all prospect of cure. I should be loath to adopt this sweeping condemnation. I have seen cases of epilepsy, combined with mental derangement, recover; although, I admit, they constitute a difficult class of case to manage.—*Lancet, Oct.* 8, 1852, *p.* 321.

[As it would be impossible to describe in detail the particular class of remedial agents adapted to each class of deranged minds, in the succeeding lecture the subject has been generalized,—the most prominent kinds of insanity, and the difficulties of their management, only being discussed.]

In regard to the treatment of acute mania, the important and much-litigated question at issue among practitioners of all countries, is that relating to the propriety of depletion. Need I direct your attention to the conflicting and contradictory opinions entertained by eminent writers on this important and much-vexed therapeutical point? Whilst some practitioners of great repute and enlarged experience fearlessly recommend copious general depletion for the treatment of insanity, and refer to cases in which this practice has been attended with the happiest results, others, equally eminent, and as much entitled to our respect, denounce the lancet as a most fatally dangerous weapon, and shudder at the suggestion of abstracting, even locally, the smallest quantity of blood. In avoiding Scylla, we must be cautious of being impelled into Charybdis. The error consists in a vain effort to discover a uniform rule of treatment, and attempting to propound some specific mode of procedure adapted to all cases. He who maintains that bloodletting is never to be adopted in the treatment of mania, without reference to its character, its origin, the peculiar constitution of the patient, and the existence of local physical morbid conditions, which may be materially modifying the disease, and giving active development to delusive impressions, is not a safe practitioner. Neither would I confide in the judgment of the physician who would, in every case of violent maniacal excitement, attempt to tranquillize the patient by either general or local depletion.

In attacks of insanity, when the symptoms are acute, the patient young and plethoric, the habitual secretions suppressed, the head hot and painful, the eyes intolerant of light, the conjunctivæ injected, the pupils contracted, the pulse rapid and hard, and the paroxysm sudden in its development, *one* general bleeding will often arrest the progress of the cerebral mischief, greatly facilitate the application of other remedies, and ultimately promote recovery. In proportion as the symptoms of ordinary insanity approach those of phrenitis, shall we be justified in the use of general depletion. Although it is only occasionally, in instances presenting peculiar characteristic features—cases occurring in the higher ranks of life, where the patient has been in the habit of living *above par*, and is of a sanguineous temperament—that we are justified in having recourse to the lancet, there is a large class of recent cases presenting themselves in the asylums for the insane, both public and private, in the treatment of which we should be guilty of culpable and cruel negligence, if we were to omit to relieve the cerebral symptoms by means of the local abstraction of blood. It is, alas! the fashion and caprice of the day to recklessly decry the application of cupping-glasses or of leeches in the

treatment of insanity, in consequence, I think, of the slavish deference shown to the opinion of a few French pathologists of eminence, who have, by their indiscriminate denunciation of *all depletion*, frightened us into submission, and compelled us to do violence to our own judgment. The local abstraction of blood is, in the hands of the discreet and judicious practitioner, a powerful curative agent; and yet it is the practice of some men, and men, too, of position, to discard altogether the remedy.

I will briefly refer to the kind of case in which the local abstraction of blood will be found most beneficial, if proper regard be had to the temperament, constitutional condition, and the local circumstances modifying the character of the attack. In insanity, when the exacerbations occur at the menstrual period, *cæteris paribus*, leeches to the vulva and thighs, with the use of foot-bath, and the exhibition of aloetic purgatives, will be attended by the most favourable results. In irregular and obstructed menstruation, the local abstraction of blood will be very serviceable. In suppressed hemorrhoids, leeches to the neighbourhood of the sphincter ani will greatly benefit in unloading the hemorrhoidal vessels, and relieve the brain of undue excitement. In cases of nymphomania, leeches to the vulva are indicated, and have been known to greatly benefit. In cases of intermittent insanity, the paroxysm may often be cut short by relieving the overloaded state of the vessels of the head by means of cupping or the application of leeches. In some instances, I have tried Dr. Wigan's plan, and have applied leeches to the Schneiderian membrane, particularly for the treatment of insanity of early life, and connected with conduct evidently the effect of cerebral irritation. I have seen this mode of procedure of essential benefit in persons of plethoric constitution and of sanguineous temperament. Occasionally the insanity is found to be associated with active visceral disease, or with hypertrophy and other affections of the heart. Under these circumstances, when there exists great tenderness over the region of any of the visceral organs, and we are satisfied, by a careful stethoscopic examination, that hypertrophy of the heart is present, leeches applied over the seat of the local mischief, conjoined with other appropriate treatment, will materially aid us in subduing the maniacal affection. In cases of illusions of hearing, or of vision, it will often be necessary to apply leeches behind the ears, or over the superciliary ridges. I have known this practice entirely remove the morbid illusions which had been embittering the person's life.

But apart entirely from the local affections to which I have referred, for the treatment of idiopathic insanity, apparently without any complications, or modified by any of the associated diseases, the careful and temperate local abstraction of blood, when general depletion is inadmissible, will often materially shorten the duration of an attack of insanity, and restore the mind to a healthy condition. I am anxious to record my favourable opinion of this mode of treatment, because I have witnessed so many sad results from an opposite timid and reprehensible neglect of the means placed within our power for the treatment of the varied forms and degrees of mental derangement. Sad consequences have undoubtedly followed the indiscriminate use of depletory measures; the presence of violent mental excitement has occasionally led the practitioner to the conclusion that the disease was of an active character; and in the attempt to allay the undue cerebral excitement by means of antiphlogistic measures, the patient has sunk into incurable and hopeless dementia. But recognising an *anæmic* class of cases, where great excitement is often associated with loss of nervous and vital power, we must be cautious in permitting serious disease to be creeping stealthily on in the brain, no effort being made to relieve the congested cerebral vessels or inflamed tissue, until serious disorganization has taken place in the delicate structure of the vesicular matter, and the patient is for ever lost. In the treatment of acute mania, the remedy next in importance to cautious depletion is that of *prolonged hot baths*. To Dr. Brierre de Boismont, of Paris, at whose excellent institution I first witnessed the application of this remedial agent, the profession is indebted for reviving a practice which had long fallen into disrepute. In treatment of acute mania, the prolonged hot baths will be found of the most essential service. Dr. Brierre de Boismont has recorded the history of sixty-one of seventy-two cases that were subjected to this mode of treatment. Three-fourths of this number were cured in a week, and the remainder in a fortnight. The patients remain from eight to ten

and fifteen hours in warm baths, whilst a current of cold water is ontinually poured over the head; the temperature of these baths is from 82° to 86° Fahr.; the affusions 60° Fahr. Among the therapeutic effects of these baths, Dr. B. de Boismont reckons a diminution of the circulation and respiration, relaxation of the skin, alleviation of thirst, the introduction of a considerable quantity of water into the economy, an abundant discharge of limpid urine, a tendency to sleep, a state of repose. This mode of treatment is said to be ineffectual in cases of periodic intermittent mania, in mania beginning with great mental impairment, or associated with epilepsy or general paralysis. The result of my own experience of this plan of treatment has produced a very favourable impression upon my mind, and I think it is entitled to a fair trial in all our public asylums where they admit acute and recent cases.

In some forms of acute mania it is desirable, as a substitute for depletion, to diminish the activity of the circulation by the exhibition of nauseating doses of the tartrate of antimony; it may be serviceably combined with the tinctures of digitalis and hyoscyamus. This remedy, however, requires careful watching, as it often has been known to suddenly reduce the vital powers to a low ebb, and extinguish life. It will be found beneficial in proportion to the recent character of the case, and the positive activity of the cerebral circulation. The tincture of digitalis was formerly in great repute as an anti-maniacal remedy; the experience of late years has not encouraged us in administering it in the doses prescribed by some of the old writers; nevertheless, it is a useful agent, and occasionally proves a valuable auxiliary in the hand of the practitioner who carefully watches its operation.

For the cure of the acute forms of insanity the douche bath has been much lauded; but this remedy is now rarely used in British asylums. I have occasionally seen benefit derived from its exhibition, but it requires great caution in its use. A patient has been subjected, whilst in a paroxysm of acute delirium, to the douche bath, and has sunk almost immediately into incurable idiocy! The physical shock has occasionally been known to produce a good moral impression. For illustration: a patient imagined himself emperor of the world, and would not allow any one to address him by any other title. The immediate application of the douche bath destroyed his idea of royal dignity, and he was willing to admit that he had never been, nor was at any time a regal personage. A few hours subsequently the delusive impression returned in all its original force; the douche bath was again had recourse to, and a second time the morbid impression vanished; by a series of baths he was restored to sanity, and after his complete recovery, when the particulars of his case were placed before him, he observed, "Why did you not whip me, and beat this nonsense out of my head? I wonder how you could have borne with my folly, or I have been guilty of such contemptible arrogance and obstinacy." As a substitute for the douche, the shower bath is often used with great benefit, particularly in certain forms of melancholia, associated with nervous depression and general debility. In cases of melancholia, or other kinds of chronic insanity connected with a congested state of the liver, the nitro-muriatic bath will occasionally do much good. In a few instances I have noticed marked benefit from Bertolini's sedative bath, composed of henbane two pounds, and equal parts of hemlock, and cherry laurel leaves, well infused in a sufficient quantity of hot water. But the simple hot bath in certain conditions of the nervous system, particularly in some forms of suicidal mania, is of the utmost benefit. A warm bath a short period before retiring to rest, bathing the head at the same time with cold water, particularly if the scalp be unnaturally hot, will often ensure a quiet and composed night when no description of sedative, however potent its character and dose, would influence the system.

In the early stages of insanity, and throughout its whole course, the bowels are often in an obstinately constipated condition. The concentration of nervous energy in the brain appears to interfere with that supply which should proceed to other structures; consequently there appears to be a want of healthy sensibility in the mucous membrane of the bowels, and an interruption to the peristaltic action of the intestinal canal. There is no class of agents which act so certainly and effectually in relieving the mind when under the influence of depressing emotion, as cathartics. The ancients considered hellebore as a specific in certain forms of

melancholia. In the hands of modern practitioners it has not been found to merit the high encomiums which have been passed upon it. It is important in every case of insanity, but particularly in the acute stages of mental derangement, to act powerfully upon the bowels by means of a succession of brisk cathartics. The bowels are often found gorged with fæcal matter, and immediate relief often follows the administration of two or three doses of calomel and colocynth, or of croton-oil. It will often be necessary to assist the operation of the cathartics by means of enemata. In hysterical and some other forms of insanity there is always a disposition on the part of the patient resolutely to resist the calls of nature, and, knowing this peculiarity, we must carefully watch the condition of the bowels, otherwise serious mechanical obstructions may ensue, followed by intractable diseases of the rectum. Insanity is often associated with gastric and intestinal disease, with an irritable condition of the mucous membrane of the alimentary canal; and, in such cases, although it is important to relieve the bowels and prevent them from being constipated, we must bear in mind that the injudicious exhibition of irritating drastic cathartics may aggravate the mental disease, by increasing the gastric and intestinal irritation, and thus do permanent and irremediable mischief. Much injury may arise from the indiscriminate and injudicious administration of cathartics. In insanity associated with menstrual obstructions, it will be necessary to exhibit the class of purgatives known to act specifically upon the lower bowel; consequently aloetic cathartics, such as the compound decoction of aloes, are found of most service in these cases. In plethoric habits, when there is a marked determination of blood to the head, no medicine will relieve so speedily as active doses of the compound powder of jalap.

In the treatment of insanity, the class of medicines termed *sedative* play an important part. If exhibited with judgment, the most gratifying results often follow *their continuous and persevering administration*. The sedative treatment of insanity is a subject of itself, and I quite despair of touching even upon the confines of many interesting and important points involved in the consideration of this division of my lecture. In insanity unassociated with active cerebral circulation, congestion, or paralysis, or after the head symptoms have been relieved by the local abstraction of blood and the administration of appropriate medicine, the exhibition of sedatives will be followed by the most beneficial results. In recent cases they are generally inadmissible, except in delirium tremens and puerperal insanity, and other forms of derangement analogous in their pathological character and symptoms to these affections. In chronic insanity, in melancholia unconnected with abdominal repletion, or visceral disease, the preserving use of sedatives in various combinations will often re-establish sanity, when no other course of treatment is likely to be successful in dispelling the illusive impressions, or raising the drooping and desponding spirits. Battley's solution, the tincture of opium, the meconite, acetate, and hydrochlorate of morphia, the preparations of hyoscyamus, conium, stramonium, camphor, hops, aconite, ether, chloroform, hydrocyanic acid, Indian hemp, are all of great and essential service if administered with judgment and sagacity. In suicidal insanity, when local cerebral congestion is absent, and the general health and secretions are in good condition, the meconite and hydrochlorate of morphia often act like a charm, *uninterruptedly and perseveringly given* until the nervous system is completely under its influence. I have witnessed the most distressing attacks of suicidal mania yield to this treatment, when every other system has failed. I could cite the particulars of numerous cases of this form of insanity radically cured by the occasional local abstraction of blood from the head, the administration of alteratives, the warm bath, and sedatives. In the use of this powerful curative agent, our success will often depend upon a *ready adaptation of the kind of sedative to the description of case in which it may be deemed admissible, and a judicious combination of various kinds of sedatives*. I do not think we pay sufficient attention to such combinations. I have often seen an apparently incurable and unmanageable case yield to several kinds of sedatives combined, when it resisted the operation of any one or two. The extract of conium is often of service in cases of insanity combined with epilepsy; conjoined with mineral tonics, conium is occasionally of benefit, particularly in melancholia connected with chronic diseases of the digestive organs and with neuralgia. In cases of uterine irritation, I have seen great good result from

the combination of hops, camphor, and hyoscyamus. In illusions of vision, belladonna, commencing with quarter-grain doses, will be found a useful remedy. In insanity complicated with dysmenorrhœa, the combination of camphor with hyoscyamus, opium, or conium, may be given with great advantage. The hydrochlorate of morphia, in union with dilute hydrochloric acid, is said to be useful in cases where the sedative treatment is desirable. I am often in the habit of exhibiting sedatives and tonics in a state of combination, particularly conium with iron, opium with quinine, or with the infusion or compound decoction of cinchona. In debility, with irritability of the nervous system, accompanied by restlessness, Battley's solution, with the preparations of cinchona, will often prove of great benefit. The tincture of sumbul I have occasionally administered, and I think with advantage, in paroxysmal or convulsive forms of insanity. I have given to the extent of one or two drachms for a dose. In hysterical derangement, the tincture of Indian hemp will occasionally allay the excitement, and produce sleep more rapidly than any other form of sedative. The valerianate of zinc has not answered the expectations of those who have spoken so highly of its medicinal virtues. Tincture of opium with camphor, and the tartrate of antimony, is an excellent combination in cases of doubtful cerebral congestion. Tincture of hops in doses of from one to four drachms, it will be necessary to give when no other formulæ are admissible. As a mild form of sedative, compound ipecacuanha powder is occasionally recommended; but a good substitute for Dover's powder is a pill composed of opium, ipecacuanha, and soap.

In treating the more chronic forms of insanity, particularly melancholia, it will be essential to bear in mind that they are difficult of cure, because, owing to the slow, obscure, and insidious character of the disease, the mental affection has been of some duration before the attention of the practitioner has been directed to its existence. As this form of derangement generally exhibits itself in trifling perversions of the affections and propensities, leading to little acts of extravagance and irregularity of conduct, associated with great depression, we often find the attack has existed some years before a necessity is felt for any medical advice or treatment—perhaps a suicidal propensity has manifested itself, this being the first apparent overt act of the insanity.

It is necessary, before suggesting any course of treatment in melancholia, to ascertain whether any latent visceral disease be present. Occasionally the local irritation will be found either in the liver, or the stomach and bowels, and in women the uterine functions are frequently disordered. In the religious and other forms of melancholia in females, the delusive ideas are often associated with uterine irritation; and under such circumstances, if actual physical derangement of an active character exists in this organ, the best treatment will be, the application of leeches to the neighbourhood of the uterus, combined with warm hip-baths, sedatives, and mineral tonics. In cases of melancholia, the digestive functions are often much vitiated, the circulation languid, the skin cold and flaccid; and these symptoms being conjoined with a general loss of physical tone, such patients require generous diet, good air, gentle exercise, and occasional stimuli. When dyspeptic symptoms are combined with an inactive state of the bowels, I have often administered the compound tincture of guaiacum with great benefit. It is important to watch the particular features in these cases, and to improve the general health by the exhibition of mild alteratives and vegetable tonics, with alkalies. I have occasionally administered, with success, in this form of insanity, apparently associated with an abnormal condition of the nutrition of the brain, cod-liver oil, with preparations of iron.

My time will not admit of my submitting for your approval the treatment best adapted for those forms of mental disease associated with an atrophied or softened condition of the nervous matter. I think more is to be done for the cure of these cases than the writings of medical men would lead the student to suppose, particularly if the disease be seen and subjected to treatment in the early stages. I have recorded the details of several instances of cerebral disease, exhibiting all the legitimate features of ramollissement, and yielding to the persevering administration of the preparations of iron, phosphorus, zinc, and strychnia, combined with generous living, and the occasional application of a leech behind the ear, should indications of cerebral congestion be present. I have also derived benefit in these

cases from the use of the milder forms of mercury, associated with cinchona. In cases of impairment of the mind, loss of memory, defective power of attention, occasional paroxysms of *mental* paralysis, unconnected with lesions of the *motor* power, I have found a solution of the acetate of strychnine, and a solution of the phosphate of strychnine, of great advantage.

In some chronic forms of insanity, in dementia, and persistent monomania, connected, as it was supposed, with morbid thickening of the dura mater, and with interstitial infiltration of the membranes, as well as with exudations upon its surface, I have occasionally had the head shaved, and have perseveringly rubbed over the scalp a strong ointment of the iodide of potassium combined with strychnine. In other instances I have kept the head painted with the mixture of iodine. I have seen marked benefit from this mode of treatment. In several cases where the mental symptoms were supposed to be associated with effusions of serum, I have ordered the iodine to be applied externally, at the same time exhibiting minute doses of calomel, or mercury-with-chalk, to slightly affect the system: this, conjoined with occasional tonics, diuretics, and stimuli to support the vital powers and enable the patient to undergo this treatment, is occasionally productive of considerable benefit, in cases apparently placed quite beyond the reach of improvement or cure.

I have only briefly spoken of two distressing and often unmanageable forms of insanity—viz., of suicidal mania, and of those cases where the patient obstinately refuses to take either food or medicine. In insanity associated with suicidal tendencies, it will be important to ascertain whether any cerebral congestion exist, as such is often the case. A few leeches applied to the head, followed by an active cathartic, will relieve the local irritation, and often dissipate the idea of self-destruction. In the absence of any positive active cerebral symptoms, the prolonged hot bath, and the persevering exhibition of some form of sedative, is the best treatment to be adopted. I have seen the suicidal impulse removed after the administration of a few doses of belladonna; but the meconite and hydrochlorate of morphia, if given for a sufficient length of time, will, in the great majority of cases, distinct from actual incurable visceral or cerebral disease, effect a cure. Occasionally the shower-bath, and counter-irritation in the vicinity of the head, will aid us in re-establishing health. Cases sometimes present themselves where the patient determinately refuses to take either food or medicine. This character of case gives those who have the care of the insane much anxiety. The refusal of food may be connected with determination to destroy life, or it may be associated with delusive impressions. I am inclined to believe that in the majority of these cases the symptom is the result of some local mischief remote from the brain, and sympathetically affecting the organ of thought. Upon examination we often find, in these cases, great gastric derangement, obstinate constipation, considerable tenderness upon pressure in the epigastric region, hepatic disease, the tongue foul, breath offensive, and other symptoms of derangement of the chylopoietic viscera. The determination to resist nourishment arises, under such circumstances, from a *positive loathing of food—a want of all inclination for it.* I have seen cases of this description, where it has been deemed necessary, in order to prolong life, to introduce food forcibly into the stomach, speedily cured by the adoption of means for improving the state of the general health and digestive organs. Mild alteratives, vegetable tonics, blisters over the region of the stomach, if the patient complain of pain in that region upon pressure, the warm and shower-bath,—is the most successful treatment to adopt in cases connected with obvious visceral derangement. Instances sometimes occur, where the refusal of food is clearly traceable to a delusive impression—an hallucination of taste, which makes everything appear to the patient bitter, disgusting, and poisonous. The unhappy patient imagines that he is commanded, either by good or evil spirits, not to eat. These unhappy persons must be treated upon general principles, and the remedies be adapted to the peculiar character of each individual case. Under such hallucinations of taste, patients often swallow the most extraordinary articles. The case of a lunatic is recorded, who imagined that his stomach required to be strengthened with iron. He was seized with inflammation of the œsophagus, of which he nearly died. He then confessed that he had swallowed the blade of a knife. After his death, there were found in his stomach seven oxidated lath nails,

each two inches and a half long; thirty-three nails, two inches long; forty-nine smaller iron nails and rivets; three pieces of wound-up iron wire; an iron screw, an inch long; a brass image of a saint; part of the blade of a knife; and other articles; amounting in number to 100, and weighing about twenty ounces. It will be necessary, in cases like those to which I have been referring, to ascertain whether the determination not to eat is the effect of such perversions or hallucinations of taste.

The time will only admit of my alluding generally to the importance, as a principle of treatment, of the administration of tonic remedies, active exercise in the open air, and to good and generous living. It is rarely necessary, in the treatment of insanity, to deprive the patient of animal food. Individual cases occasionally come under our notice, in which it is necessary, for a time, to enforce a farinaceous diet; but such is not often our duty. Among paupers, insanity is frequently cured by the free use of good animal food, and a generous supply of porter. Even when we are satisfied of the necessity of local depletion, it will often be necessary to give wine, and allow the patient a generous diet.

There are many other essential points in connexion with this important, this vast subject, which I am reluctantly compelled to pass entirely over. When I had resolved to bring this matter before the profession, I quite despaired, in the time allotted for one lecture, of being able to skim even upon the surface of the many deeply interesting points involved in the inquiry; but feeling—deeply, earnestly feeling—that, in relation to my own speciality, the subject of the medical treatment of insanity was of the first moment, of the most vital importance, to the profession as well as to the public, I did not hesitate in selecting this topic for one of my lectures, feeling assured that you would kindly make allowance for all imperfections, and generously appreciate the difficulties I had to encounter in concentrating in one short lecture a faint glimpse or shadow of a subject requiring for its successful exposition nine or ten lectures, equal in length to the one I have had the honour of reading this evening. I may have formed an extravagant and exaggerated conception of this subject, but I cannot close my eyes to the fatal consequences which have so often ensued from a belief in the incurability of insanity by medical means. In all grades of society, we witness the pernicious, the fatal, the disastrous effects of this dogma. We see it influencing the conduct of county magistrates in the architectural proportions, medical organization, and general arrangements of our great national asylums. We also perceive the consequences of the error operating in many of the private institutions for the treatment of the insane. Alas! are we not compelled to confess, that many of the asylums for the insane constitute mere places of detention,—model prisons,—and not what Government ought to insist upon making them—*hospitals for the cure of the insane*, under the government of medical officers, well trained, by preliminary education, for their important vocation, acquainted with the philosophy of the human mind, and fitted by the character of their *heart*, as well as by their *intellect*, for the right performance of the solemn and responsible duties entrusted to them by the public and the legislature?—*Lancet, Oct.* 16, 1852, *p.* 346.

157.—CASES OF ABSCESS OF THE ABDOMINAL PARIETES.

By Dr. John C. W. Lever.—Reported by Messrs. Nason and Knaggs.

[The first case was that of a female, aged 37, who was admitted April 16, 1851, and was delivered of her first child Dec. 24, 1850. After a tedious labour instruments were required to aid the delivery. Though no hemorrhage followed delivery immediately, yet a profuse discharge took place two days after, followed by a pale watery fluid. She is stated to have been unconscious for two days. After her recovery, great pain began to be felt around the pubic joint, with occasional throbbings. The symptoms gradually became aggravated, and heat and swelling were noticeable above the pubes. The following are the]

Symptoms on admission.—She was a tall woman, with pale, anæmic appearance, dark hair and eyes; countenance expressive of great suffering; tongue moist,

covered with a foul creamy fur; gums spongy; and breath offensive, from the action of mercury. Pulse 90, feeble and irritable; urine natural; bowels had been for some time in a very relaxed condition, but were now more regular; appetite bad; and wakeful.

At the lower part of the abdomen there was a hard tumour, extending from the pubes to within an inch and a half of the umbilicus, more prominent on each side of the linea alba than in the median line. She complained of great pain at the part, and more so in the right hip, as if it had been bruised.

April 16th. Ordered—

Julep rhei comp., ter die sumend.; cataplasma lini abdomini applic.—Beef tea.

17th. She had slept very little during the night, on account of the pain, which was increased even by her removal to the hospital; but in the morning she had become somewhat easier.

18th. Was better this morning; her pain was less; and she had passed a good night. Bowels not opened since her admission. A dose of mist. magnesiæ c. magnesiæ sulphate was given, which relieved them very freely.

20th. The tumour seemed softening on either side of the linea alba, and yielded an indistinct sense of fluctuation; the pain was not so great, but pressure increased it; she slept more comfortably. Her appetite had not returned. Perstet.

24th. The pain and tenderness had increased. The features were more indicative of great suffering than heretofore. Bowels confined. Ordered—

℞. Mist. magnes. c. magnes. sulph. ʒi. sumend. hirud. xij. tumori applicand. Pergat.

25th. Pain much relieved by the application of the leeches. She has slept better. Pulse 100, sharp; tongue still foul; skin hot and dry; countenance still very anxious; fluctuation now more distinct.

27th. She complained of more pain, and of restlessness at night. Tumour rapidly softening. Bowels confined. Ordered—

℞. M. magnes. c. magnesiæ sulph. ℏ. statim. pulv. Doveri, gr. v., om. nocte. Pergat.

28th. Had slept better from the effects of the opium, and, indeed, seems comparatively easy. Countenance not quite so anxious. Pulse weaker and more irritable. Face flushed.

℞. Ammon. sesquicarb. gr. iv., ex. infus. serpentar. ʒi. d. sumend.

℞. Pulv. Doveri, gr. v, o. n. h. s. Pergat.

30th. Much the same. Fluctuation unmistakeable, the fluid being now very superficial.

May 1st. She had passed a very restless night in acute pain. Countenance extremely anxious. She was now evidently beginning to suffer much. The abscess seemed inclined to point on the left side. Mr. Nason made an incision at the most prominent part of the tumour, and, with the aid of a director and bistoury, enlarged it freely, and evacuated about eight ounces of sanious pus, much to the relief of the patient. The pus had no fæculent odour. The fulness of the left side communicated with that on the right. Ordered—

℞. Quinæ disulph., gr. ij. ex. infus. rosæ co. ter die sumend.; cataplasma lini abdomini applicand.

2nd. Very much relieved. Had passed a good night, and was more free from pain. Tongue cleaner, and appetite improved. The abscess had discharged freely during the night.

3rd. Improving in every respect. There was a copious discharge of pus from the wound, so much so that when she attempted to raise herself (thus making the recti muscles tense from contraction) the matter jetted out to the height of above half an inch. She now took meat, porter, and wine, continuing the quinine and poultices.

[On July 10th the discharge is stated to have quite ceased, and the walls of the cyst contracting on the 29th, she was quite convalescent.]

Case 2. C. S., aged 39, was admitted under Dr. Lever, June 25th, 1851. She had been confined seven weeks before. A week previously she had been seized with bleeding in gushes, which lasted three days, when a piece of something resembling placenta came away. On the 7th day of the bleeding she was delivered by version. After delivery she lay for a week almost unconscious. She had been

previously a stout, full-bodied woman; but was much reduced by the large quantity of blood which she lost in this labour. She kept her bed for three weeks, and then only complained of dragging pain at the lower part of the abdomen, which a fortnight before became much aggravated, and was accompanied by febrile disturbance. Antiphlogistic measures were adopted, but without affording much relief; and the symptoms continued up to the time of admission. She perceived a fulness on her left side over the left iliac fossa, gradually extending upwards towards the lumbar region, having a fluctuating feel, and being moveable. There had been no shivering. Ordered—

℞. Ammon. s. carb., gr. v. ex. infus. serpent. t. d.

℞. Pulv. Doveri, gr. v. o. n. sumend.; hirud. xij. abdomini; vini, f℥ iv.

July 4th. There was still a gradual enlargement going on. Fluctuation was more distinct; no rigors. The pulse was to-day somewhat quickened, and there was rather more febrile excitement. Her tongue was white; appetite very much on the decline.

10, p. m. The abscess burst while she was making some slight muscular movement, and discharged about two quarts of unhealthy purulent fluid, not mixed with fæculent matter, but having a most fetid and offensive smell; so much so that at first it was doubtful whether it communicated with the intestine. Ordered.

Cataplasm. lini, abdom. 4tis horis applic.; pil. opii, gr. j., h. s. sumend.; vini rubri, f℥ ij, statim.

5th. Dr. Lever saw her to-day and passed a probe into the wound, which led into a circumscribed sac, whence the pus had escaped, and which he found to extend, as the swelling had previously indicated, upwards towards the umbilicus. He did not think that it communicated with the bowel. He ordered her to continue the poulticing, and to have full diet, with twelve ounces of wine and two pints of porter daily. Also infus. rosæ comp. c. quinæ disulph., gr. ij; et vini opii, ♏x. ter die sumend.; pil. opii, gr. j. o. n.

8th. The discharge continuing, the matter became less offensive, and the cyst gave to the touch a sensation of modulated hardness, as if it were contracting. Her pulse was quiet; the tongue clean; and she was gaining strength; and, with the exception of a little wandering at night, probably in some measure due to the effects of the stimuli, she felt very comfortable. Bowels open.

13th. Her strength daily improving. The discharge of fetid pus had diminished, and the cyst was painless, and firmly contracted and hard.

16th. The discharge was less putrid, as well as less in quantity, cleaner, and more healthy. Her appetite was good, and her nutritious and generous diet showed its effects in her rapidly increasing vigour, and without causing any unpleasant head symptoms. She now slept without her dose of opium.

25th. Regular daily improvement had taken place, and now the discharge had quite ceased. She was quite free from pain. She had been up for a short time daily. Diet continued.

29th. She was almost well, and would soon be able to go out.

Aug. 21st, 1852. She left perfectly cured.

In process of time she became pregnant; was delivered by Mr. Knaggs, from the Lying-in Charity, Guy's Hospital, of a fine full-sized living male on the 7th instant (August), labour being completed by natural efforts and with greater ease than in any of her previous accouchements. Some days afterwards, Mr. Osborne, the second clerk, was called to her, and found her left leg œdematous, and herself much distressed by an attack of irritative fever, which, by active and well-directed measures, was soon subdued.

These cases of abscess of the abdominal parietes have been very common within the last few years, at least several cases have passed under my notice; they have occurred for the most part in women who have been reduced by some exhausting cause, viz., hemorrhage, tedious labour, poor diet, &c. In their treatment, while we endeavour to lessen the local inflammation, we must support the general strength; and under this plan of management I have not known a case to terminate fatally. Sometimes the diagnosis is difficult; but by placing the patient on her knees and elbows we can at once detect whether the tumour be internal or peripheral.

A proper abdominal bandage should, after cure, be applied, to prevent the formation of a ventral hernia.—*Guy's Hospital Reports, Vol.* 8, 1852, *p.* 80.

158.—*New Mode of administering Iodine.*—M. HANNON has suggested, that when iodine is to be applied to a local tumour, as to a goitre, it should not be rubbed in at once,—a practice which often irritates the skin excessively,—but that it should be placed between two layers of cotton wool, sewed in a bag, and tied directly over the part. The vapour of the iodine rapidly penetrates through the bag, and stains both the skin and the linen. To prevent this, a thin sheet of gutta percha or gummed silk is placed over the bag. It is indispensable to put the iodine between two layers of wadding; if placed merely in a bag, it passes through and blisters the surface like ammonia. Applied in this way, iodine enters the system with great rapidity, and appears in all the excretions.—*Presse Médicale.—Med. Times and Gazette, Sept.* 4, 1852, *p.* 242.

159.—*Camphor an Antidote for the Poison of Strychnine.* By DR. I. PIDDUCK. —[It having been stated that for the poison of strychnine no antidote was known, Dr. Pidduck relates the following case.]

J. W——, pianoforte-maker, a weakly man, of intemperate habits, accustomed to work in a hot workshop, and to exposure to cold on his way to and from work, was the subject of severe attacks of rheumatic gout. After one of these gouty rheumatic attacks he was suffering under dyspepsia, neuralgic pains, and general debility. For the relief of these symptoms strychnia was prescribed, in the dose of a *sixteenth* of a grain three times a day. By mistake, at the chemist's (one of the first in London), the grain of strychnia, with sugar, was divided into *six* instead of sixteen powders.

The first dose taken in the evening produced severe twitchings of the muscles; but the second dose, early in the morning, threw him into violent convulsions. The messenger who came for me said he was dying. Immediately on discovering the mistake, and witnessing one of the frightful paroxysms, I prescribed twenty grains of camphor in six ounces of almond mixture, one fourth to be taken every two hours. The first dose so completely quieted the convulsions that there was no need of a second.

Cases of this kind rarely occur, and I have only this one to adduce, but the incompatibility of strychnia and camphor proves, *pro tanto*, that the one is the antidote to the other. As a general rule, to which there probably may be many exceptions, the poison and the antidote severally are to be found in the three kingdoms of nature.—*Lancet, July* 24, 1852, *p.* 80.

160.—EXPERIMENTS IN ANIMAL ELECTRICITY.

By DR. DU BOIS-REYMOND.

[The following observations are from an extract of Dr. du Bois' work on his discoveries in animal electricity.

On a stand by the window, the galvanometer was placed; and, close to it, on another table, the apparatus by which different parts of muscles or nerves of the human body could be included in the circuit of the galvanometer. Around the galvanometer stood the few visitors present. A frog had just been killed; a portion of one of the muscles was placed in the circuit, Dr. du Bois foretelling that in such a position little or no action would occur; that in another position the needle of the galvanometer would be deflected in one direction or in the opposite one, according to the position of the muscle.

The sensibility of the galvanometer being increased, the same result was obtained with the smallest particle of muscle.

After this the sciatic nerve of the frog was taken, and it had an action precisely similar to that of the muscle. No difference could be detected in the electrical action of the nerve and muscle.

Then the nerve current was shown to produce contraction of the muscle of the frog's limb by the simplest arrangement. Three cushions of blotting-paper were wetted with salt water; the limb of a frog was taken, and the sciatic nerve was dissected out, but left attached to the limb. The cut upper end of the nerve was placed on two of the cushions, and, in a certain position of the nerve, on connecting

the two cushions by means of the third cushion, contraction of the leg immediately took place.

After this, the influence of muscular contraction in changing the electrical action of the muscle was shown; and from this Dr. du Bois passed to the effect produced by voluntarily contracting one arm while the other was left at rest.

This ended the demonstration. The clearness of the results; the skill of the manipulator; the genius, above all, which had directed the investigation, called forth from all the highest praises.

Many asked where an account of these discoveries could be obtained, and were shown two thick octavo volumes in German; and we strongly urged the publication of an abstract.

During his stay in London, Dr. du Bois watched with the greatest interest the English dress in which his discoveries were about to appear; and without doubt this must give additional value to the facts and deductions which are now before us.

Since the publication of Galvani's original discovery, nothing has been discovered in animal electricity which can be compared in importance and extent with the discoveries made by Dr. du Bois-Reymond.—*Med. Times and Gazette, July* 10, 1852, *p.* 42.

161.—ON THE MORBID ACTION OF SOFTENED FIBRIN, &c.

By Henry Lee, Esq., Surgeon to the Lock Hospital, Assistant Surgeon to King's College Hospital, &c.

So much care has been taken of late years to distinguish purulent from other morbid fluids, and especially from softened fibrin, that the idea appears to have become general, that the latter differs essentially from them in its morbid actions. Experiments would appear to show that while pus, under certain circumstances, exercises a very different influence upon the blood to that which is produced by dissolved fibrin, yet under other circumstances their actions are strictly analogous.

When blood stagnates in one of the larger veins of the body, it undergoes certain changes which terminate in the liquefaction of some of its constituents. Thus, in the decolorised masses of fibrin found in the veins after death, it is not at all uncommon to find the central portions in a fluid state. This change is in exact accordance with Mr. Gulliver's experiments upon fibrin when removed from the body, but maintained at its natural temperature. It would appear, however, that this conversion takes place much more readily in certain conditions of the system than in others; and as, on the one hand, the fibro-albuminous portions of the blood may very readily assume the solid form, so on the other hand may these same constituents of the blood, after they have become solid, be reconverted into their fluid condition.

Case.—A gentleman, of a gouty habit, had an attack of low, ill-defined erysipelatous inflammation in the leg; at the same time the femoral vein could be felt as a thickened cord at the upper part of the thigh. An incision having been made in the leg, a small branch of the internal saphena vein was divided, and the blood flowed from it as it would have done from an artery, but without pulsation. This evidently depended upon the blood being prevented from following its natural course by the obstruction in the femoral vein. The blood which flowed from the wound was received on a sponge in some warm water. Almost immediately it separated into its different parts. The decolorised fibrin floated in firm shreds in the water, and adhered in the same condition to the sponge upon which it was received. Some of this fibrin was collected; and, having been separated as far as possible from any admixture of water, it was placed in a clean bottle and corked up. When collected, it was quite as firm as fibrin usually is, and it required some little pressure to force some of the portions through the neck of the bottle. No artificial heat was in this case applied, but on the following day, the whole of the contents of the bottle had become reconverted into their original fluid condition.

The readiness with which the fibro-albuminous portions of the blood may undergo the change from the fluid to the solid, and from the solid to the fluid form, is a point of considerable interest in tracing the mode in which purulent affections of bone may extend, first to the nutritious veins of the part, and subsequently to the general system. When fibrin, which has been allowed to become fluid by

decomposition, is mixed with recently drawn blood, it will determine its rapid coagulation. In this respect, the action of dissolved fibrin is analogous to that of pus; but there is this important distinction between the two, that, whereas the coagulum formed by pus is particularly firm, that formed by decomposed fibrin is loose, and however long it is kept, it does not become more solid.

The experiments which I have before published, illustrating the peculiar action of pus upon blood, have been repeated by several persons, and especially by Mr. Millington, of Edinburgh. The observations of this gentleman led him to the conclusion, that, whereas pus added to living blood determined its rapid and firm coagulation, putrid fluids, on the contrary, either retarded or altogether prevented such an action. From experiments which I have myself made with putrid fluids, I believe this conclusion to be generally true. But the effect of putrid fibrin upon blood affords a marked and very peculiar exception. It is to be remembered, that the blood in the living being is peculiarly subject to the action of decomposed fibrin; and it is in perfect accordance with the usual economy of nature to find the sensibilities of a part peculiarly alive to those influences which are calculated to affect it injuriously. The blood forms no exception to this general rule. Its sensibilities for its self-preservation are as evident as those of other parts of the body, and are called into play in an especial manner in reference to those injurious influences to which it is peculiarly liable. It is seldom that the blood is subject to the direct action of putrid vegetable matters, or even to the putrid secretions from animal bodies. But it is in an especial manner open to the influence of portions of liquified fibrin derived from blood, which for a time has stagnated in some part of the vascular system. The following experiments will show how readily the contact of such is felt by the living blood, and also the means adopted for the preservation of the general mass of the circulatory fluid from its deleterious influence.

Experiment.—Some fibrin of the blood was obtained quite firm, free from any colouring matter, and was kept and allowed to decompose. At the expiration of three or four weeks, it had become fluid and of a dirty light brown colour; a small portion of this was now mixed with some recently drawn blood from a bullock which had just been knocked down. In two minutes from the commencement of the experiment the mixture had formed a uniform soft coagulum: a similar quantity of unmixed blood, taken at the same time, remained fluid several minutes afterwards.

This experiment was repeated with some of the same fibrin in a more advanced stage of decomposition. A half pint of blood was taken from a horse in perfect health, and to this was immediately added a quarter of an ounce of the putrid fluid. The whole coagulated loosely in a minute and a half. The coagulum was kept till the next day, but did not become firmer than it was after it had first coagulated. The effects obtained from the action of decomposed fibrin on living blood are thus shown to be different, both from those produced by ordinary putrid fluids on the one hand, and by pus on the other. The experiment appears to prove, that in case any putrid fibrin should find its way into a blood-vessel, the same means would be in force to limit its influence, to seal the vessel, and to protect the system against its circulation, as would happen if some healthy pus had been similarly introduced. But the soft and loose coagulum in the one case, although as rapidly formed, affords much less protection to the constitution, than the firmer and adherent clot in the other.*

When the fluid fibrin has attained a very great degree of putridity, the coagulum formed may not be of sufficient consistence to resist the circulating power of the blood. The morbid poison, when introduced into a vein, will, under such circumstances, pass without obstruction into the system. The effects produced will then offer a strong contrast to those which result from a similar introduction of pus into the circulation.

The following experiment, illustrative of this point, was performed for me by Mr. Mayer, veterinary surgeon. A young and perfectly healthy ass was secured, and the right jugular vein exposed. An ounce of fluid, derived from the spontane-

* It is important to notice that these observations apply only to fluid fibrin in a putrid state; whether the effects of fluid fibrin which had not undergone decomposition would be similar, I have not had an opportunity of ascertaining.

ous decomposition of portions of the fibrin used in the two former experiments, but in a much more advanced state of putrefaction, was mixed with an equal quantity of water, and injected by means of a syringe into the exposed vein. The vessel did not become "corded," and the circulation was not apparently impeded, as happens when a similar experiment is made with pus. In a few moments, the animal gave three or four groans expressive of much distress. The vital powers at the same time appeared to be suddenly prostrated. The animal was unable to rise, and soon fell into a state of syncope.

The faintness lasted for a few minutes. On getting up, the animal reeled and staggered about for some time, and then recovered sufficiently to walk to his stall. Some reaction now commenced, the breathing was disturbed, short, and quick; the pulse 120 in the minute, small and wiry. These symptoms continued for about an hour and a half, when the animal became very restless and uneasy, evincing internal pain by groaning and looking at his side. All food and water were refused, and death followed four hours after the operation.

On a *post mortem* inspection, sixteen hours after death, the jugular vein, into which the putrid fluid had been injected, was found in its natural condition, partially distended with fluid blood. It was pervious through its entire length, and contained no coagula. The lungs were studded with irregularly circumscribed, soft, black patches. When cut into, these discharged a black fluid, having the appearance of a mixture of blood and ink, and of a strong putrid smell. The heart had liquid blood in both its cavities. The cæcum and colon, and a portion of the small intestines, were deeply congested, and of a dark livid colour. There was an effusion of many pints of serum in the peritoneal cavity; this, as well as the blood throughout the body, had a putrid and very unpleasant smell.

In this case, the putrid injection either prevented the coagulation of the blood in the body, both before and after death, or had the effect (in the event of any coagula having been formed) of determining their speedy reconversion into a fluid state. These results afford the strongest contrast to those produced by the introduction of pus into a vein. In the latter case, the immediate and firm coagulation of the blood presents a barrier against the admission of the contaminated blood into the circulation; or, if by any means this first means of localising the morbid matter should prove abortive, the tendency of the infected portion of the blood to coagulate is evinced in some distant part of the system. In cases where it reaches the lungs, it there produces firm spherical patches of livid induration, not unlike in appearance to those observed in the experiment last quoted, but differing altogether from them in consistency. In the one case, the patches of congested are produced by the firm coagulation of portions of contaminated blood; in the other, the blood has lost its vital properties together with its power of coagulating, and is already in a state of incipient putrefaction.

In the first instance, the affected portions of lung are at first firm, and an interval is required before they can become softened down; in the other, dissolution commences in the soft, pulpy portions from the first. These general considerations will enable us to trace the progress of disease from a portion, and often a very small portion, of injured cancellous structure of bone to the general system; and to account for the lapse of time which, in the great majority of cases, occurs between the receipt of the injury and the development of its constitutional effects.

When a portion of the cancellous structure of a bone has been injured, the blood in the Haversian canals of the injured part becomes necessarily stagnant between the injury and the next communicating branches. These stagnant portions of blood usually become coagulated and gradually absorbed. If the wound in the bone should suppurate, they at first serve the very important purpose of closing the vessels against the secretions of the part: an office which is subsequently much more permanently performed by the process of adhesive inflammation. It will occasionally happen here, as in the larger veins of the body, that the contents of the injured blood-vessels will become mixed to a greater or less extent with the secretions with which they are in contact. This may arise from some accidental mechanical cause, or from some inherent defect in the coagulating power of the blood.

The admixture of diseased secretions will determine the coagulation of those

portions of the blood with which it comes in contact, and thus the coagula will extend farther along the vessels than they would have done, had the blood at first firmly sealed the divided extremities of the veins. Uncontaminated blood will remain for a long time in the living body, either in its solid or fluid state, without undergoing much alteration; but this is not the case when the blood has become mixed with vitiated fluids. Farther changes will then readily take place in it; and we may judge of what takes place in the minute vessels of bone, by that which can be better observed in the larger veins of the body.

There appears no doubt, from evidence derived from direct experiment, that a coagulum formed of vitiated blood may, and often does, in healthy states of the constitution, become gradually and entirely absorbed and eliminated from the system by the intestinal and hepatic secretions; but at other times, the vitiated and, perhaps, loosely formed coagulum becomes softened and poured into the adjacent veins. It here determines one of the three following physical results.

1. The dissolved matter of the first formed coagulum mixing with fresh portions of blood may lead to the formation of fresh coagula. These may retain for a time the vitiated fluid; and, adhering at intervals to the sides of the vessels in which they are contained, they may prevent any of the foreign matter from reaching the general circulation. Within a short period, however, the centre of the newly formed coagula will become softened, and gradually deprived of its colouring matter. The process of softening will proceed from the centre towards the circumference of each portion, until nearly the whole is converted into a white fluid resembling pus. Should there be an opening in the bone, this may escape externally; but otherwise, increasing in quantity by the secretions of the surrounding parts, it is forced forwards in the course of the circulation to contaminate and mix with fresh portions of blood, which, in their turn, first become coagulated, and then softened down, and converted into the same purulent looking fluid. If an opening be made in a bone in which this process is going on, not only the cancellous structure, but the Haversian canals will appear filled with pus. It occasionally happens, under these circumstances, that on making an opening into a bone, a distinct little jet of purulent looking fluid may be seen to escape from one of the canals of the nutritious vessels. In such a case, the cavities of the vessels must of course be accurately closed by firmly adhering coagula in the surrounding parts.

The effects of purulent contamination of the blood usually extend in the course of the circulation.

Case.—A man, twenty-six years of age, had a blow upon the head which fractured his skull, causing at the same time a scalp wound, which left a portion of the bone denuded. Eighteen days afterwards, he complained of pain in the head, accompanied by nausea. To this succeeded what he termed "soreness of the stomach," which was soon followed by drowsiness and insensibility. He then became paralysed, and a good deal of irregular muscular twitching was observed in different parts of his body. He died a week after the commencement of the above symptoms. Yellow matter was found in the diploë of the parietal bone in the neighbourhood of the fracture, and purulent looking fluid, mixed with flakes of fibrin or lymph, occupied the *posterior half only* of the longitudinal sinus.

It sometimes, however, happens that the effects of the disease extend in a course opposite to that of the circulation. In these instances, it is probable that the whole mass of the blood has become, to a certain extent, contaminated, those portions which are kept at rest being the most liable to become first coagulated and then softened down. This is not unfrequently observed in cases of infection of the blood after child-birth. The blood in the common iliac vein will become coagulated in consequence of some diseased fluid poured into it from the uterus. This will cause the blood in the femoral and saphena veins to stagnate. Portions of the contaminated and stagnant blood in these, and in the vessels which supply them, will then become coagulated and undergo subsequent changes, involving the coats of the veins and neighbouring parts. Thus the disease will appear to have extended downwards, in a course contrary to that of the circulation. In the same way we must explain the curious fact, that after amputation of one leg or thigh, an abscess will occasionally form in one of the veins of the opposite limb. In such cases, *post-mortem* examinations sometimes show that the coagulation of the blood

has extended from the amputated limb to the vena cava. An obstruction there would of course act equally upon both sides of the body. It is a remarkable fact in these cases, that the coagulum will never extend beyond the opening of the hepatic veins; the double current from the portal system and from the veins opening into the inferior cava being sufficient to carry forward any viscid contents of the vessel.

2. When the blood has become infected, instead of coagulating, it may separate into its different elements. In this case the fibrin is left unmixed with either the serum or the colouring matter of the blood. This process differs from that of coagulation in this, among other important particulars, namely, that whereas a coagulum formed of all the parts of the blood fills the vessel which contains it, the separation of the blood into its different parts leaves the fibrin alone in the vessel, and allows the more fluid parts to pass on into the general circulation. The consequence of this is, that the vessels in which such an action has taken place still remain pervious. The blood can still pass between the fibrinous deposit and the walls of the vein in sufficient quantity to carry on, although imperfectly, the natural circulation of the part; such a condition, unlike that of coagulation of the blood, offers no security against the passage of any diseased secretions along the vessels. This tendency to the separation of the blood into its different parts was strongly marked in the blood which had been detained in the saphena vein in the first case above related. It would appear to be an action which not very unfrequently takes place in the body, although necessarily difficult to illustrate with regard to the smaller veins. I have lately, however, had an opportunity of observing this change in the capillaries of the liver. From each small tube a delicate thread of fibrin could be drawn, leaving some of the fluid parts of the blood in the vessels, which were stained of a darker colour than natural.

A case lately published in the "Gazette Médicale de Paris," affords a very good example of this separation of the fibrin from the other elements of blood. The case was that of a soldier, who died in St. Michael's Hospital, having suffered for a long period with symptoms of disease of the chest. Four months before his admission into the hospital, without any apparent cause, and in a single day, the eyelids and the cheeks became considerably swollen. The lower extremities and the forearms became at the same time œdematous. Upon a post-mortem examination the vessels of the left lung were found to contain fibrinous concretions, having the form of ramified cylinders, which extended through the pulmonary artery into the right ventricle of the heart. Those concretions were white, or of a russet colour, solid and resisting. They adhered but very slightly here and there to the lining membrane of the vessels, and were in some parts of the pulmonary artery, and of its larger branches, surrounded by a layer of semi-fluid black blood.

A similar condition has been observed with regard to the vessels of the brain; the longitudinal sinus has been observed to contain a firm yellow fibrinous mass, extending on the one hand in an arborescent form to the vessels of the pia mater, and on the other to the jugular veins.

In such instances, the sudden increase of the symptoms may mark with tolerable certainty the period at which the greater part of the fibrin is deposited, but this would appear to take place gradually in the majority of instances; and it is probable, as in the case of the soldier above mentioned, that it may exist for a long period, during which the circulation may be carried on sufficiently for the purposes of life. Upon a post-mortem inspection, the firm decolorised fibrin may at once be distinguished from the blood which has coagulated around it after death.

3. The contaminated blood, instead of coagulating, or of separating into its different elements, may decompose. The whole of the constituents of the blood are then together involved in the changes which take place. The experiments above related shew that the same impediments will not, under such circumstances, be offered to the passage of morbid matter into the circulation as when the blood firmly coagulates in the veins. An interval, however, even in the most strongly marked cases usually elapses between the development of the infecting cause and the manifestation of constitutional symptoms. This is especially the case where diseased secretions enter the circulation through the nutritious vessels of bone. The morbid matter is detained for a certain time, during which the process of

decomposition is established. The first infected portions of blood, together with the morbid matters which they contain, then pass on to infect the blood in adjacent vessels. The dissolved and putrifying fibrin from these will proceed further towards the centre of the circulation; in its course it will loosely coagulate fresh portions of blood, and then determine their decomposition. Each fresh portion of blood that is infected will add to the quantity of putrid dissolved fibrin in the vessels, and thus the disease will propagate itself, quite independent of the original source whence the morbid matter was derived. Each portion of blood which is attacked loses its vitality, passes into a state of decomposition, and becomes itself the means of infecting other portions. The contaminated blood may then be found in the vessels in every stage of decomposition, or it may have passed out of the vessels, having stained them during its decomposition of a deep livid colour. Long tracks of deep purple veins will occasionally be found, some being blocked up with the viscid blood in various stages of decomposition, and some having discharged their contents, and being comparatively empty.

Case. A man of rather intemperate habits received a kick from a horse on the right leg, on the 15th of October, 1851. The right tibia and fibula were fractured, and the fracture communicated with a wound in the skin. He was purged, and kept upon low diet. On the 22nd, some redness was observed around the wound, and the cellular tissue in the neighbourhood felt boggy. On the 1st November he vomited after taking food, and on the following days he had several attacks of shivering. On the 4th, his complexion was yellow; he experienced no pain. Five days after this he died.

No union had taken place between the fractured extremities of the tibia, and the parts immediately around the broken portions of the fibula were in a sloughing condition. The superficial and deep veins of the leg and thigh were greatly distended with dark thick blood, but contained no coagula. The iliac veins contained small soft and dark coagula, but were otherwise healthy. In the middle of the right lung were two patches of secondary inflammation, and the right lobe of the liver contained several secondary abscesses, surrounded by firm and dark texture.

The examination of the following case, conducted by Dr. J. W. Ogle, I had the opportunity of witnessing through the kindness of Dr. Wilson, of St. George's Hospital. A married woman, twenty-three years of age, miscarried, during the sixth month of her pregnancy, on the 4th of June, 1851. A few days afterwards she was attacked with intense pain in the abdomen, and two or three days later with pain in the calf of the left leg. The pain in the leg was accompanied by some swelling, which afterwards extended up to the thigh. She died on the 11th of July.

A small putrid abscess occupied the course of one of the branches of the left hypogastric vein, at a short distance from the neck of the uterus. The iliac and the femoral veins of the same side were filled with blood in every stage of decomposition. The spermatic vein of the same side was stained of a dark purple colour, but its canal was pervious and contained no coagula.

When the blood in one of the larger veins of the body decomposes, as in the preceding case, the period at which severe constitutional symptoms follow is comparatively short. Analogous affections originating in the minute vessels of bone usually require a longer period for their development. This is illustrated in the following cases.

H. B., aged 19, sustained a fracture of the fibula. Three months after the accident, and three weeks before his death, he had an attack of diffuse cellular inflammation in the leg, which terminated in suppuration of the knee-joint. Upon examining the limb, the tibia in the neighbourhood of the fracture was exposed, and its structure was soft and of a black colour.

J. C., aged 45, had an extensive scalp-wound. Nineteen days afterwards he experienced a rigor, and shortly became paralysed on one side. A portion of the skull, which was exposed, presented a dark green appearance, and when removed with the trephine, was of a putrid odour. The longitudinal sinus in this case contained contaminated blood, and there were secondary abscesses in the left lung.

In some cases, where the most severe constitutional symptoms have followed injuries of bones, the original lesion has appeared of no very great importance, and

the surface of bone exposed has been of very limited extent. In the following instance, the original injury was not regarded with any apprehension, yet it proved speedily fatal after the appearance of the symptoms of secondary inflammation.

E. P., aged 50, had a lacerated wound of the foot, which detached a small portion of the base of the fifth metatarsal bone. This bone was also simply fractured towards its centre. After having for some time progressed without any unfavourable symptoms, pain in the chest, a rapid pulse, depression, with delirium, suddenly made their appearance, and were found, on a post-mortem examination, to have arisen from inflammation of the right pleura, and the formation of secondary abscesses in the right lung. The amount of contaminated blood contained in the injured bone must in such instances be very small; and there can be little doubt that recovery would take place much oftener than it does, did not the disease propagate itself in the blood. When this takes place, it is usually indicated by one of the three classes of physical changes above described. The different natural processes which they illustrate may, however, take place in various degrees in the same case; and the condition of the blood upon post-mortem inspection will, in different parts of the vascular system, present corresponding varieties.—*London Journal of Medicine, Sept.* 1852, *p.* 796.

162.—INDIAN HEMP AS AN OXYTOCIC.

By Dr. John Grigor, Nairn.

[Dr. Grigor gave the Indian hemp in sixteen cases, a tincture being made of 24 grains to the ℥j. In nine of these cases, though given to the extent of 3iiss. in separate doses of 25 or 35 drops, no effect was produced except in one case, in which the pains were arrested and sleep induced, after which labour commenced in earnest naturally.]

In seven cases in which the tincture of hemp succeeded so well with me, five were cases of first confinement, of satisfactory though very slow labour, and phlegmatic temperament. I have noticed the contractions acquire great increase of strength and frequency immediately on swallowing the drug, and have seen four or five minutes elapse ere the effect ensued; and if none was induced within the latter space of time, I have not observed its effects at all afterwards, notwithstanding repeated doses. In these few cases, I had opportunities of giving it from the time when the os uteri would admit the point of my finger till the expulsion of the child. Judging from experience, I believe that, in appropriate cases for the use of this stimulant, and when effectual, it is capable of bringing the labour to a happy conclusion considerably within a half of the time that would otherwise have been required, thus saving protracted suffering to the patient, and the time of the practitioner.

I have not observed it to possess any anæsthetic effects. I have used it in two cases along with the inhalation of chloroform, and I did not observe that that agent interfered in any way with its action.

When the effects of the hemp were subsiding, I have been able to recall and keep up "the good pains" by the addition of ten drops given from time to time. I consider the expulsive action of the cannabis to be stronger than that of the ergot, but less certain in its effect; and it has the advantage over the ergot, of usefulness in the early stage of parturition. I believe that the previous ineffectual administration of the hemp does not interfere with the after-exhibition and full working of the ergot.

Such are my brief observations on the new and interesting use to which Bang, or the Hachisch of India, has been put. In the few cases in which I thought its administration safe, and not counter-indicated by malformation, &c., you have given the result of those in which this effect was, and was not, displayed. I cannot conclude these remarks without entering my dissent against the use of uterine medicinal stimuli in general, on account of the frequent difficulty of accurate conception of relative dimensions of parts, &c. Yet all obstetricians must acknowledge that, in many cases, such stimuli are indispensable; and to be possessed of one capable of so early application, is decidedly a matter of much importance. I would also

notice that, in labour, whether the cannabis shows its peculiar effect on the uterine contractions or not, there seems, as in tetanus, &c., to be a very great tolerance of the drug—nor have unpleasant consequences, so far as I have seen, appeared afterwards; and, whilst it is acknowledged as a powerful controller of inordinate muscular spasm, it is equally, in many cases, a powerful stimulant of the uterine muscular fibre in labour, if not in the unimpregnated state.—*Monthly Journal of Med. Science, Aug.* 1852, *p.* 125.

163.—ON THE THEORIES OF ANIMAL HEAT.

By Sir B. Brodie, Bart.

The general evidence in favour of the chemical theory of animal heat has received many important additions of late years. The fact that a considerable amount of heat is generated by plants during the processes of germination and flowering, when, like animals, they withdraw a large amount of atmospheric oxygen, and replace it by carbonic acid set free from their own tissues, has long been known; and very careful observations upon the *Colocasia odora*, a plant of the Arum family, which is remarkable for the elevation of temperature which its spadix undergoes at the height of the flowering period, have demonstrated that the production of heat is constantly accompanied by the generation of carbonic acid, that it does not take place if the flowers be made to expand in an atmosphere of nitrogen, and that during both the attainment of the highest point and the subsequent decline, there is a close correspondence between the amount of oxygen consumed in successive hours, and the excess of heat shown by the spadix above that of the surrounding medium. So, again, the researches of Mr. Newport upon insect temperature have shown that the same constant coincidence exists between that generation of heat which they occasionally exhibit, and the replacement of atmospheric oxygen by carbonic acid. Moreover, since we may regard it as all but demonstrated, that the animal can under no circumstances convert the non-azotized saccharine or oleaginous compounds so abundantly supplied by plants into the albuminous constituents of its own tissues, the large amount of these substances consumed by animals, and the provision obviously made for their digestion and for their reception into the circulation, become utterly meaningless, if they are not introduced for the express purpose of being applied to the maintenance of the combustive process, and the consequent generation of heat. Further, the direct effect of withholding food altogether, as the experiments of Chossât have shown, is to produce a complete absorption of the fat, which, with the products of the waste of the azotized tissues, is burned-off day by day for the maintenance of the animal temperature; the duration of life in this condition is strictly proportional to the amount of combustive material previously stored up in the form of adipose tissue; and when this is all exhausted, the heat of the body, which had previously suffered but little decline, diminishes from hour to hour, until the animal dies of cold—the application of external warmth being still able to arouse it to activity, even when it has sunk into a state of torpor approaching to coma. All experiments upon the respiration, moreover, concur in showing that the liberation of carbonic acid is much more rapid at low temperatures than at high; showing that there exists within the system some means of self-adjustment, whereby the amount of fuel consumed is proportioned to the quantity of heat which it requires to produce, for the maintenance of its temperature at the regular standard.

The recent researches of M. Bernard upon the functions of the liver, leave little room for doubt that one of the most important purposes of this organ is to prepare the respiratory pabulum; not so much, however, in the mode originally supposed by Liebig, by separating it from the blood as bile, this to be reabsorbed and subsequently burned-off in the lungs; but rather by transforming, without separation, certain materials previously contained in the blood, so that as the current passes through this gland, both the substances newly-absorbed from the alimentary canal, and those which have been taken up in the course of the general circulation, are subjected to its influence, and then pass on, through the right cavities of the heart, to the pulmonary vessels, in a state of peculiar fitness to undergo a further transformation by the influence of the oxygenated atmosphere which they there

encounter. The combustive materials directly supplied by the food are chiefly, in herbivorous animals, those of the farinaceous and saccharine, and those of the oleaginous types. The farinaceous matters are converted by the digestive process into the saccharine form; so that grape-sugar is found in the mesenteric veins after the ingestion of such aliment, as is also cane-sugar if this have been taken in. But the blood is not very tolerant of the presence of grape-sugar, still less of that of cane-sugar; so that if these substances be injected into the *jugular vein* in any quantity, they are speedily detectible in the urine. During their passage through the liver, however, they are converted into a new form of sugar, which has been termed "liver-sugar," the characteristic properties of which seem to consist in its differing from grape-sugar, as grape-sugar differs from cane-sugar, that is, in being far more tolerated by the blood, and in being more readily converted into lactic acid. Hence when grape-sugar and cane-sugar are injected into the *vena portæ*, they do *not* show themselves in the urine; and the liver-sugar which is produced by their transformation is not traceable further than the pulmonary vessels, being speedily transformed, and in great part eliminated (probably passing through the intermediate stage of lactic acid) by the respiratory process. But it is one of the most curious results of M. Bernard's researches, that the liver not only thus transforms other saccharine compounds, but that it generates sugar *de novo*, under circumstances which seem to forbid our regarding it as anything else than a product of the retrograde metamorphosis of the albuminous compounds. For M. Bernard has found sugar in the liver and hepatic blood of carnivorous animals, and even in the liver of the mammalian fœtus and of the embryo chick; and so constant does the presence of this substance appear to be, that the production of a peculiar kind of sugar, specially fitted for undergoing the combustive process, must henceforth be regarded as one of the most important functions of the liver. It has been supposed that the sugar generated by the liver may be derived from fatty matters brought to it by the vena portæ; but we cannot find in Bernard's experiments, any evidence of this; and whilst we have no chemical reason for believing that sugar can be formed by the transformation of fat (which would be an inversion of the usual order of metamorphosis) we know that it may be generated as one of the products of the disintegration of muscular tissue, the juice of flesh having yielded *inosite*, a new form of sugar, to the analyses of Scherer.

It has been further shown by M. Bernard, that the liver produces a peculiar fat, from the constituents of the blood which passes through it; and it seems that this liver-fat, like the liver-sugar, may be the product of the transforming process, exercised alike upon materials newly absorbed from the alimentary canal, and upon the products of the disintegration of the tissues. That albuminous compounds in a state of retrograde metamorphosis may generate fatty matter, can scarcely, we think, be any longer questioned; since the phenomena of fatty degeneration concur with chemical evidence, to prove that this is one of the forms into which their elements pass, in preparation for their egress from the body.

Thus, then, it appears that the *respiratory pabulum* of carnivorous animals, which is derived from the decomposition of the albuminous constituents of their food and of their own tissues, precisely corresponds with that which is furnished to the herbivorous races in the non-azotized articles of their diet; that the liver may be regarded as an organ specially destined to alter the characters of the blood, not merely by what it separates *from* it, but also by the changes it makes *in* it; and that these changes have reference to the constant sustentation of the combustive process, by the preparation of certain organic compounds peculiar to the living body, of a nature that may enable them readily to undergo oxidation when exposed to the air. And it is a most interesting and suggestive fact, that the products of the disintegration of the system should thus be applied—by passing through the very same course—to the same final uses, as are served in a large proportion of the animal kingdom by organic compounds that cannot be rendered subservient to the production of animal tissue. We can scarcely fail to see in the whole of this arrangement, not merely a means of freeing the system from effete matters, but a scheme for the regular supply of the combustive apparatus with appropriate fuel; and those, if such there be, who deny that the production of animal heat is essentially dependent upon the conversion of hydrocarbonaceous compounds into water and carbonic acid, have to explain how these compounds can be eliminated,

as we know they are by means of this oxidating process, *without* the production of heat; and they have also to explain why the herbivorous animal should be instinctively impelled to ingest a large amount of food, that can serve no histogenetic purpose in the economy, and why their digestive apparatus should be specially adapted to the reduction, solution, and conversion of non-azotized compounds, as well as to the introduction of azotized matter into the system.

The recent researches of M. Barral "On the Statistics of the Human Body," have afforded much additional information upon the subject of our present inquiry. He has carefully determined the ultimate constituents of the food, and of the various excretions, of four individuals, during five days, experimenting thus upon himself also during summer as well as in the winter; and presents us the results in an elaborate series of tables. We shall cite only a few of the most important. In the first place, the *carbon* of his food amounted to 5654·1 grains in winter, and 4090 grains in summer; and of this the proportion ejected in the form of *fæces* was 236·2 grains in winter, and 139·4 in summer; that eliminated by the *urine* was 234·6 grains in winter, and 211·5 grains in summer; whilst that which passed off by exhalation (pulmonary and cutaneous, the latter, however, being an insignificant fraction) was no less than 5183·3 grains in winter, and 3741·1 in summer. Thus we see how large a proportion of the carbon of the food is thrown upon the respiratory process for elimination, and how considerable a diminution takes place in the amount exhaled during the heat of summer, involving a corresponding difference in the demand for aliment. M. Barral's researches appear to afford the means of determining approximatively at least, how much of the *hydrogen* of the food is oxidized in the respiratory process, and how much of the water exhaled is really generated combustively. He found that of the whole amount of hydrogen taken in, not more than from one-eighth to one-tenth passes off by the other excretions, the remaining seven-eighths or nine-tenths being exhaled in the condition of watery vapour by the lungs. Now of the *oxygen* ingested, he found that 3841·4 grains in winter, and 2757·6 grains in the summer, passed of by the lungs in the condition of water; and this would, of course, carry off its equivalent of hydrogen, also derived from the food, without any production of heat.* But the amount of hydrogen actually exhaled was 801·3 grains in winter, and 597·5 grains in summer; so that after deducting one-eighth of the weight of the oxygen, there remain 321·1 grains in winter, and 252·8 grains in summer, as the amount of hydrogen which could not have been oxidized and eliminated as water, save at the expense of the oxygen of the air, and which must therefore have undergone a combustive process whereby heat could not but have been generated.

Thus it appears certain, that we are not to look only at the combustion of carbon, but to that of hydrogen, as a source of animal heat; but it is scarcely fair to reckon (as Professor Liebig has done) the whole surplus of the oxygen absorbed, above that contained in the carbonic acid exhaled, as being consumed in this mode. For there are other oxidizing processes going on within the system, some of them of no mean importance; more especially the production of the sulphuric and phosphoric† acids from the sulphur and phosphorus contained in the protein compounds of the food, giving rise to the production of the alkaline sulphates and phosphates

* This will be obvious enough if we take the simple case of sugar, which is carbon + the components of water, already united in equivalent proportions; the carbon being eliminated by combustion the water remains, to be carried off as such. A fatty body, on the other hand, is carbon + hydrogen + the components of water; here a portion of the hydrogen, as well as the whole of the carbon, is destitute of its equivalent of oxygen: and water is actually generated in the combustive process, in addition to that whose components were already united in the substance, although under another form.

† Professor Liebig has lately asserted, with his usual dogmatism, that no phosphorus exists in the body, or in the alimentary materials, except in the state of phosphoric acid, and further, that the notion that such other compounds of phosphorus exist in the body, and that phosphorus occurs in the protein-compounds in a state analogous to that in which sulphur exists in them, "proceeds generally from amateurs in science, and rests on superficial observations, without the slightest scientific foundation." (See his "Familiar Letters," 3rd edition, pp. 451, 2.) We apprehend that several chemists, of no inferior authority as analysts, maintain a different opinion; and that there is abundant physiological evidence derived from the occasional luminosity of the urine, breath, and sweat, as well as of the solids of the body when undergoing decomposition after death, or even before life is extinct, which proves the existence of phosphorus either in a basic or in an imperfectly oxidized condition, as one of the normal constituents of the body: this phosphorus being usually completely oxidized within the system, and carried off as phosphoric acid in combination with alkaline bases, but passing into the excretions in its lower state, when, either from an absolute deficiency of respiration, or from the greater demand for oxygen set up by other matters contained in the blood (alcohol, for example), it does not undergo complete metamorphosis.]

which are excreted by the urine. In fact, it may probably be stated, that there is scarcely a single chemico-vital transformation in the body, either *progressive* (that is to say, tending to the formation of living tissue) or *retrograde* (that is, tending to the reduction of the more complex histogenetic substances to the comparatively simple compounds which present themselves in the excretions), in which oxygen is not concerned. Thus, then, although the production of carbonic acid and water may be immediately effected by the combustive metamorphosis of saccharine and fatty matters, and although these matters, when not directly supplied as such by the food, are prepared within the body for the respiratory operation, yet the process of such preparation is one that really involves a great number of separate stages of metamorphosis, beginning with the conversion of alimentary materials into living tissue, and including all the changes which take place during the life of that tissue, and in the progress of its final disintegration. Hence, although the production of such part of the carbonic acid and water, as proceeds directly from the union of the carbon and hydrogen of the alimentary materials with the atmospheric oxygen, *may* be looked on as a simple combustive operation, yet as to the whole of the remainder, which proceeds from the disintegration of the tissues themselves, it must be admitted that the appearance of a given quantity of carbonic acid in the expired air, can only be looked on as the exponent or manifestation of a long series of changes of composition taking place in the interior of the body, of which it is one of the ultimate products. Some of the advocates of the Chemical theory of Animal Heat, have spoken of the body as if it were a mere furnace, into which a certain quantity of fuel is put, whose combustion affords a given equivalent of heat; whilst from its chimney there proceed so much carbonic acid, so much water, and so much imperfectly consumed smoke. The whole series of intermediate operations, whose original materials and final products alone are thus recognised, is completely ignored; and the confident assertions of the chemists, based, as they appeared to be, upon a very broad foundation in fact, have passed muster with the general, and even with the medical public, notwithstanding that there is a considerable body of facts, which are not only not explained by chemical doctrine, but which seem, at first view, to be really in antagonism with it. These facts cannot be passed over, either by the scientific physiologist or by the observant practitioner; for they force themselves upon the attention of the latter; whilst they must be recognised by the former, as having no less a title to his consideration than have the ordinary phenomena of calorification;—we refer to the local development of heat, or to local deficiency, altogether irrespective of the activity of the circulation; and to the connexion of such irregularities with peculiar conditions of the nervous system.—*Brit. and For. Med. Chir. Review, July*, 1852, *p.* 144.

164.—ON THE USE OF MANGANESE AS AN ADJUVANT TO IRON.

By M. Pétrequin.

M. Pétrequin quotes various authors to prove that manganese is a normal constituent of animal and vegetable tissues; and believes that wherever iron is present in appreciable quantity, manganese coexists with it. Hence iron alone will not always succeed in blood-diseases. M. Pétrequin has observed many cases of chlorosis, which have resisted iron as obstinately as anæmia connected with cancer or organic degeneration. Other cases again, after deriving a certain amount of benefit from iron, remain stationary. Others again appear cured by iron; but the cure is not permanent. The remedy required in these cases, M. Pétrequin finds to be manganese. He does not give it or iron alone; but combines them.

It is especially in *diseases of the blood* that ferro-manganic medicines are useful. They have a special action on the vascular apparatus, on the formation of the blood, and on the circulating fluid itself. They do not act merely as tonics or restoratives; but are regenerators of the blood. They have succeeded admirably in anæmia following hemorrhagy, operations, polypi, metrorrhagia, &c. than in the chlorosis attending puberty, which is a more common disease than is generally supposed, and occurs even in males. M. Pétrequin has also frequently found the combinations of iron with manganese of benefit in the diseases of women at the critical period.

He has often seen, in these subjects, *metrorrhagia*, accompanied with an aspect of the surface which would lead to the suspicion of organic uterine disease; the hemorrhage, however, was but a complication, and the patients, apparently in a hopeless state, have recovered under the use of ferro-manganic preparations, conjoined with tonics and ergotine.

In *amenorrhœa* and *dysmenorrhœa*, the patients often imagine that they require to be bled; but care must generally be taken not to comply with this request. M. Pétrequin has more than once seen cases of amenorrhœa with severe chlorosis, in which it has not been desirable to hasten the appearance of the catamenia—the consequent loss of blood aggravating the disease. The general state of health must here be carefully attended to. Œdema of the lower limbs sometimes occurs in these cases; but it is a less severe complication than when it attends metrorrhagia. It often disappears, as the patient recovers, under the use of iron and manganese.

These medicines are no less efficacious in the treatment of *anæmia* resulting from prolonged intermittent fevers, prolonged suppuration, strumous, syphilitic, or cancerous affections, phthisis, &c. Pills and the syrup of the iodide of manganese and iron are preferable in these cases.

In all these cases, the ferro-manganic preparations do not merely act on the stomach and nervous system, but they are absorbed, and assist in the formation of hæmatosine and new blood-globules, so as to restore the blood to its normal condition. Their effect in this way is greater than that of iron alone.

In the *functional affections of the heart* connected with chlorosis and anæmia, and which must not be mistaken for organic disease, a combination of iron and manganese with digitalis and other moderators of the heart's action is advantageous. The same remark applies to the *functional disorders of the lungs*, attending the same constitutional states.

Disordered states of the nervous system are intimately connected with those of the blood. M. Pétrequin has found that the ferro-manganic preparations succeed well in these, even though uncomplicated with chlorosis. He, as well as M. Gebian, has observed that iron is here better tolerated when combined with manganese. He has also seen benefit from the use of iron with manganese in many cases of *dyspepsia*, *gastralgia*, and *gastro-enteralgia*. Nervous affections of the digestive organs are often the result of chlorosis; and, where stomachics and cinchona have failed, iron has often been found (especially the carbonate, by some English physicians) to be of service. Gastrodynia complicating chlorosis has often yielded to the use of ferro-manganiferous water, and to pills of carbonate of iron and manganese.

In *nervous affections connected with exhaustion* from venereal excesses, onanism, rapid growth, &c., as well as in leucorrhœa, diabetes, &c., M. Pétrequin has a high opinion of these medicines. He is continuing his researches on their action in certain cases of sterility from asthenia, and in some hyposthenic affections of the scalp, such as early baldness, alopecia, &c.

M. Pétrequin has confined his observations to a limited number of the ferro-manganic preparations; and has made many observations before publishing the formulæ which he finds most useful. Having found, even at an early period, that the medicines were liable to adulteration, he has availed himself of the assistance of competent pharmaceutists. Since the publication of his first memoir, in 1849, these medicines have been extensively used in the south of France and in foreign countries.

The formulæ are few, and correspond to the preparations of iron generally used in France. They are: 1. *Pills* of carbonate of iron and manganese, or of iodide; 2. *Lozenges* of lactate of iron and manganese; 3. *Syrups* of lactate or of iodide of iron and manganese; 4. Ferro-manganic *chocolate*; 5. *Effervescing solution* of iron and manganese.

It has been observed that manganese not only preserves water, but purifies that which has undergone change (Martin-Lauzer.) Ferro-manganic waters (of which there are many in France and other parts of the continent) can be preserved and carried to a distance;—which cannot generally be done with simple ferruginous water.

M. Pétrequin commences by giving the powder of iron and manganese, with

some vinous drink; he then administers two pills daily, one before breakfast and one before dinner, replacing them soon by the lozenges. The syrups and chocolate complete the treatment. He gives the medicines at meal time. The syrup he gives before breakfast, in doses of a teaspoonful; and he finds it useful to administer directly after it some infusion of centaury, or of camomile flowers and orange.

Large doses are unnecessary and useless; for they are liable to produce irritation of the stomach and exhaustion of the nervous system; and the reparation of the blood is slow and progressive, and cannot, even were it desirable, be effected rapidly. Besides, the iron and manganese are not absorbed in any greater quantity, if large doses are given.

Preparations of Manganese and Iron.—M. Burin-Dubuisson, of Lyons, who prepared most of the ferro-manganic combinations used by M. Pétrequin, has published an interesting *brochure*, in which he gives the necessary details relating to the subject. The following formulæ are extracted from it.

Powder for Effervescing Solution of Manganese and Iron. Take of coarsely powdered bicarbonate of soda, 20 parts; tartaric acid, 25 parts; powdered sugar, 53 parts; finely powdered sulphate of iron, 1½ part; finely powdered sulphate of manganese, ½ part: mix carefully, and keep in well stopped bottles. A teaspoonful is mixed with each glass of wine and water drunk during meal time.

Pills of Carbonate of Iron and Manganese. Take of pure crystallised sulphate of iron, 75 parts; pure crystallised sulphate of manganese, 25 parts; crystallised carbonate of soda, 120 parts; honey, 60 parts; water, sufficient quantity. Pills of 20 centigrammes (3 grains) are made; they keep easily, without becoming oxidised, in well-closed vessels. From two to four are given daily.

Ferro-Manganic Chocolate. One part of carbonate of iron and manganese is first mixed with four of sugar, and divided into large lozenges; of these 100 parts (grammes) are mixed with 500 of chocolate paste, in the preparation of which 100 parts of sugar have been left out. This will make 800 lozenges, each of which contains about 3 centigrammes (nearly half a grain) of carbonate of iron and manganese. The chocolate decomposes the hydrated carbonate of manganese and iron of the saccharate into hydrated sesquioxide of iron and manganese; there is no metallic taste.

Syrup of Lactate of Iron and Manganese. Take of lactate of iron and manganese, 4 parts; powdered sugar, 16 parts; rub together, and add of distilled water, 200 parts; dissolve rapidly, and pour into a matrass over a water-bath, containing 384 parts of broken sugar; filter the solution. This syrup contains about 15 parts of lactate of iron and 5 of lactate of manganese in 3000 parts. One or two spoonfuls are taken daily.

Lozenges of Lactate of Iron and Manganese are made by adding 20 parts of the lactate to 400 of fine sugar, with a sufficient quantity of water. The mass will make 840 lozenges; of which six or eight are taken daily.

Pills of Iodide of Iron and Manganese. M. Burin-Dubuisson forms a solution of iodide of iron and manganese, in the proportion of one part by weight to two of water: the proportion of the salts is about three of iodide of iron to one of iodide of manganese. Six parts of this are mixed with 294 of simple syrup; of this, M. Pétrequin gives one or two spoonfuls daily.

Pills of Iodide of Iron and Manganese. Take of the officinal solution prepared by M. Burin-Dubuisson, 16 parts (grammes); honey, 5 parts; some absorbent powder, 9½ parts. Divide into 100 pills. The honey and the solution are first mixed, and evaporated at first rapidly, then more slowly, to 10 parts. Then add the powder, and divide the mass into four parts, which must be rolled in powder of iron reduced by hydrogen; each of these must then be divided on an iron plate into 25 pills, and again rolled in the iron powder. Finally, they are covered with a layer of tolu, according to M. Blancard's process.

All these preparations must be made very carefully. M. Burin-Dubuisson has ascertained that the commercial salts of manganese frequently contain copper, and even arsenic; he hence insists on the necessity of calcining the sulphate of manganese twice, or more frequently, at a dark red heat, and of carefully testing the solution.—*London Journal of Medicine, August*, 1852, *p.* 750.

165.—ON THE THERAPEUTIC ACTION OF FURFURINE, NICKEL, &c.

By Prof. Simpson, Edinburgh.

[Furfurine is an alkaloid, that produces in poisonous doses upon the lower animals many of the symptoms produced by quinine. The following are the results of the experiments on the properties of the sulphate of nickel. The Professor says:]

Sulphate of nickel has appeared to me to act as a gentle metallic tonic. I have generally used it in doses of half a grain or a grain, repeated thrice daily, and have given it in the form either of simple solution or of pill. In large doses it is liable, like sulphate of zinc or copper, to produce sickness and nausea, particularly if taken upon an empty stomach. I have generally requested it to be taken half an hour or an hour after meals. It has appeared to me, as the result of pretty numerous experiments and observations, that the therapeutic actions of the salts of nickel and manganese correspond in a considerable degree with the therapeutic actions of the salts of iron upon the economy; and that these three metals might, under many conditions, be almost used as therapeutic substitutes for each other. But they also specifically differ from each other in some respects. For example, in one most interesting case the sulphate of nickel arrested a severe form of periodic headache, which had previously defied iron in many different forms, and all other kinds of treatment that had been employed. The patient came from Italy last autumn, in order to place herself under my professional care; and for some months I was as unsuccessful as my predecessors had been in affording her any relief. But let me give the history of the affection, and the ultimate result, in the lady's own words. She drew up the following note of her case several weeks ago:—

"My headaches (she writes) came on soon after my second confinement, in August, 1847, and continued to return every tenth day without intermission, up to the first of February, 1852. During the first four years I was in Italy, and was attended by medical men of all countries, English, French, German and Italian. I also tried hydropathy and homœopathy, the latter for six months, but all without the slightest effect. The pain came on in a small spot on the right temple, and lasted from twenty-four to thirty-six hours. After the first eight hours severe sickness followed, which continued up to the sixteenth hour. During the attacks I had violent cold shivering fits, succeeded by a burning fever. At times I was quite delirious from the violence of the pain. I have taken large doses of steel, iron, and quinine, besides many other sorts of medicines. The quinine I took at first only two days before the attack was expected. I then took six grains every day for a year and a half, but it never put off the headache a moment beyond its day and hour, nor would anything that I could do bring it on before the time. When I first came to Scotland to be under the advice of Dr. Simpson, in August, 1851, he gave me thirty grains of quinine a-day for three days before the headache was to come on; but it returned to its hour, and as severe as ever. This was tried also with the next fit, with no better success. Dr. Simpson then tried successively furfurine, bebeerine, and arsenic; but the headache still continued up to the 1st of February, 1852, on which day I had a most severe attack. On the 4th of February, he gave me the solution of sulphate of nickel to take; since which time, to my astonishment, my usual headaches have altogether disappeared."

To the preceding account I have merely to add, that if we may judge from the result up to the present time, the cure of this patient from the use of nickel appears entire and complete. And perhaps it is but proper to remark, that this result seems fairly attributable to the action of the nickel alone, inasmuch as there was no relief under the use of any of the means or medicines previously employed for years; while convalescence distinctly began from the date of the employment of the metal in question.

Further, it is perhaps not unimportant to observe, that while the disease had lasted four years, without abatement, its subsidence in February could not be the result of change of climate, as the lady had already resided about five months in Edinburgh, or its neighbourhood, without any noticeable amelioration in the recurrence and intensity of the headaches; and at last they disappeared under the nickel, at a period of the year—viz., the commencement of spring—at which, in our cli-

mate, headaches and other periodic diseases are known to be specially liable to become increased and aggravated.

In no kind of case is the beneficial action of iron more remarkable than in the treatment of chlorosis and amenorrhœa. I have seen nickel in a similar way apparently serviceable under the same circumstances. In the latter end of last year, I gave it in a case of amenorrhœa of ten years' duration. The amenorrhœa supervened at the age of twenty-two. At the same time a galvanic intra-uterine bougie was introduced, and left for some time in the cavity of the uterus. In the course of three or four weeks menstruation took place, and has recurred regularly from that period. In such a case, however, it is difficult to say how far the result was attributable to the local means used, and what share the nickel had in the restoration of the patient's health.—*Monthly Journal of Med. Science, August*, 1852, p. 135.

166.—ON IODINE.

By Dr. Merei.

Iodine is a remedy which, I believe, we may justly call *anti-dyscrasic*, viz., which has the effect of promoting directly the depuration of the organic liquids from some dyscrasic elements. I am far from saying it is a general anti-dyscrasic, nor can I approve of the name of anti-scrofulous, as applied to it, scrofulous "being still a very vague," not to say superficial expression. But I can state the fact, that I have seen *improve*, under its use, *in a proportionally short time*, some hundreds of cases with different complaints, which we usually call scrofulous, and above all, those characterized by impetiginous or eczemato-impetiginous eruptions over the skin, the improvement or cure having been effected in the wards of the children's hospital, *without the influence of change of air or baths*, the usual assistants of antimonial and other remedies, regarded as anti-scrofulous, but which, in the hospital of Pesth, without those assistants, did clearly appear inefficacious. I beg to state, that if remedies would be subjected to similar trials in large hospitals, as we perform them in Pesth, with iodine and some other substances, by and by the number of pharmacological fallacies would become reduced. If any one should ask me, in what manner iodine acts as anti-dyscrasic, I am not perfectly sure how to answer. It acts, evidently, in a stimulant way upon the mucous membranes, the kidneys, and upon the liver. The latter action has not been duly noticed, though I can assure you that almost all bilious, or what they call hepatic constitutions, are most disagreeably affected even by small doses of iodine, so that these temperaments are seldom allowed to pass even through a mild course of iodide of potassium. Dyspepsy, for bilious vomiting, is a frequent effect, but I never observed bilious diarrhœa. The most obvious effect of it, however, is to produce irritation in the mucous membrane of the eyes and the nose connected; in higher degree, with fever and headache, it acts decidedly upon the urinary apparatus, commonly increasing the secretion of urine, by which more or less of it is again carried out of the body. Its action upon the skin is the latest, and appears as consecutive to its stimulant action upon the mucous membranes. Iodine fever resembles catarrhal fever, and is frequently followed by perspiration. Salivation, and some other effects of it, are less constant and important.

In some individuals, but very seldom in young children, we have observed a slight diminution of the testes; in some ladies the glandula mammaria has been diminished. These effects will sooner happen under long-continued small doses than under large ones, when they will excite febrile reaction.

I have observed that the more there was of iodine fever, with consequent crisis, the more evident was the anti-dyscrasic effect of this remedy.

In the clinical case-book of the Children's Hospital of Pesth there is a considerable number of different affections of bones, of one or more years' standing, in scrofulo-impetiginous children, which, under the phenomena of iodine reaction, have been cured in the short time of one to three months.

After all that I have seen, it seems to me that *the anti-dyscrasic action of iodine is not a directly chemical one, like that of iron in chlorosis, but appears to depend upon producing a sort of disturbance, the reaction upon which is followed by the curative effect.* From this it seems to follow that, whilst in chlorosis we must give iron in

frequently-repeated small doses, iodine must be administered in the opposite way. Many cases, however, may be improved or cured without fever. Fever has also its minimum in the body, which is scarcely perceptible.

From the above statements it results that iodine, in order to become a strong curative power, requires a constitution fit for its reception and reaction upon it. Now, full, phlegmatic, or lymphatic constitutions bear it the best, the nervous less, the bilious the least of all. Atrophy and anæmia must be removed before we commence with iodine. And when we consider that atrophy is the most direct indication for cod-liver oil, and the most direct counter-indication for iodine, it becomes clear that these remedies act in an opposite way, and that cod-liver oil owes not its effects to its infinitesimal part of iodine.

Now, I should feel very glad were I able to point out to you and describe more exactly the cases in which you may expect advantages from iodine. But, without having before us the patients, it is scarcely possible to give you exact directions.

Comparatively full phlegmatic constitutions, affected with eczema-impetiginosum, or even with caries, supported, in general, the strongest iodine treatment, and had the best results of it. This is one of the best results we had in the Children's Hospital with that remedy. On the contrary, prurigo, impetigo, achor, lupus, scrofulous or tuberculous infiltration of the glands, do not yield to the iodine treatment. Catarrho-scrofulous conjunctivitis also excludes the use of iodine, because under its action the inflammatory character of this affection almost constantly increases long before an anti-dyscrasic effect could be obtained. On the contrary, I frequently succeeded with it in torpid forms of swelling of the meibomian glands.

If a dyscrasic local affection, which we think proper to be successfully treated with iodine, does occur in an emaciated child, we must, before its use, improve the constitution with cod-liver oil; if the subject is anæmic, a course of iron must precede. In children of a nervous temperament, or where we encounter a great disposition to catarrhal irritation of the intestines, we assist the iodine treatment with opium or Dover's powders.—*Provincial Med. and Surgical Journal, May* 26, 1852, *p.* 258.

167.—CHLOROFORM IN SCOTLAND.

[Professor Simpson, of Edinburgh, in remarking upon this subject, observes:]

I am not aware of any death in Scotland or elsewhere from the use of chloroform in midwifery, out of the many thousand cases in which it has been employed in the old and new world. Nor, indeed, does the obstetric patient run anything like the risk of the surgical patient; for, in midwifery, though the anæsthetic is required to be given for a far longer period, it does not require to be given so deeply as in surgery.

Since November, 1847, I have only attended twelve cases of labour in which chloroform was not used during delivery. In all my other cases I have employed it; and none of those patients, I venture to say, who have used it, would again choose to suffer the unnecessary pains attendant upon labour without it. Most of my obstetric brethren employ it as frequently as I do. After once beginning its use at an obstetric case, I generally leave its exhibition to be continued by the nurse, or by any intelligent friend of the patient who may be in the room. Some of our midwives use it in the cases which they themselves attend. Two weeks ago, one of them told me that she had now employed it herself in her own practice in above fifty cases, with nothing but the happiest results, and without meeting with any circumstances to give her the slightest feeling of uneasiness in its employment.

Chloroform is manufactured to a large extent by three or four chemical establishments in Edinburgh; and as its high price in England has been, I believe, one great cause of its slow introduction into general practice among you, let me state, that with us it is usually sold wholesale to apothecaries at six or seven shillings per pound weight; and it is retailed to medical men at eightpence, and to the general public at one shilling the ounce per weight. It ought to be as cheap in the South.

I am not aware that in Scotland, where chloroform is employed so very extensively and so very successfully by medical men and others, it is ever exhibited by any one except on a handkerchief, towel, or the like; no kind of formal apparatus is used. Doubtless, one principal point consists in diluting its vapour sufficiently freely with air, and this can always be readily accomplished when a handkerchief is employed. Some American and English practitioners have proposed to render the vapour of chloroform less strong by diluting it, when used, with the vapour of sulphuric ether, or of alcohol (as in the so-called chloric ether). But alcohol, &c., often leave headache and excitement, which chloroform does not. And it is surely a thousand-fold better to dilute it with the vapour of "common atmospheric air," than with any other diluting medium.—*Med. Times and Gazette, June* 19, 1852, *p.* 628.

168.—*On a New Kind of Alcohol.*—It is said that a new kind of alcohol has been discovered by M. Wurtz, a professor at the Ecole de Médecine, at Paris, by repeated distillations of the oil obtained from potatoes. Its composition is represented to be $C_6 H_{10} O_2$. He terms it *alcool entylique.*—*Provincial Med. and Surgical Journal, Sept.* 29, 1852, *p.* 518.

169.—ON PAGLIARI'S HÆMOSTATIC.

By M. Sedillot.

M. Pagliari, a pharmacien at Rome, professes to have discovered a styptic liquor of great power; and several of the officers of the French army have testified to its efficacy. M. Sedillot has also, on several occasions, brought forward cases in corroboration; and in the present paper he adduces additional ones, in some of which, considerable vessels, although not those of the first class, furnished the blood. He says that it has been objected, that compression is employed by means of bandages and charpie; but this is merely to prevent the coagula which form being removed from the mouths of the vessels; and it has only to be continued for twenty-four or forty-eight hours. So little plastic is human blood, that compression alone, unaided by styptics, would have to be so prolonged and forcible, that it would risk the formation of ulcers or gangrene in the parts to which it was applied.

M. Pagliari has now revealed the composition, which is as follows: Eight ounces of tincture of benzoin, one pound of alum, and ten pounds of water are boiled together for six hours in a glazed earthen vessel, the vapourized water being constantly replaced by hot water, so as not to interrupt the ebullition, and the resinous mass kept stirred round. The fluid is then filtered, and kept in stoppered bottles. It is limpid, slightly styptic in taste, aromatic in odour, and the colour of champagne. M. Hepp, of Strasburg, has substituted white resin for the benzoin. Every drop of this fluid poured into a glass containing human blood produces an instantaneous magma; and by increasing the proportion of the styptic to the quantity of the blood, a dense, homogeneous, blackish mass results.

Many are the circumstances in which the surgeon may not be able to have recourse to the ligature, as in the case of friable arteries, secondary hemorrhage from deep-seated, painful, or inflamed wounds, the impossibility of seizing the artery, or where the hemorrhage results from numerous arterioles, which are too small or retracted, or from veins and capillary vessels. In all cases, in fact, where compression is now usually employed, without much benefit being expected to result from it, and often, indeed, proving useless or dangerous, this fluid seems indicated.—*Bull. de Thér.*, tom. xlii. p. 491—502.—*Brit. and For. Med.-Chir. Review, Oct.* 1852, *p.* 558.

170.—ON THE SECONDARY DEGENERATION OF PARTICULAR FASCICULI OF THE SPINAL CORD, AND OF THEIR CONTINUATION TO THE BRAIN.

By Dr. Ludwig Turck.

The following is Dr. Turck's *resumé* of the deductions which he thinks himself entitled to draw from his observations:—

1st. When, owing to protracted disease in the brain or spinal column, the nervous currents, through certain fasciculi, remain for a length of time interrupted, these fasciculi, in consequence of the abrogation of their office, have produced within them numbers of granular cells; these represent the beginning of a more complete metamorphosis, to be perfected after a further lapse of time.

2nd. When, in such cases, transverse sections are made through the spinal marrow, medulla oblongata, pons Varolii, and the brain and its ganglia, and those points which are shown by the presence of abnormal cells upon these sections to be diseased are compared with reference to their position, we are enabled to pursue the anatomical track of these secondarily diseased fasciculi, and to arrive at conclusions with regard to the course of nervous currents. The results which follow agree in part with the previous views of the direction of nerve-fibres, and are partly such as could not be reached by anatomy and physiology alone.

3rd. A fasciculus of the spinal marrow descends from the crus cerebri, continuing through the longitudinal fibres of the pons Varolii and pyramid of the same side, until, reaching the decussation of the latter in the medulla oblongata (in one case in two fasciculi), it passes over to the opposite side, and descends almost to the extreme end of the spinal cord, constituting the posterior half of its lateral column. This we designate the "pyramidal track of the lateral column."

4th. The "pyramidal track of the lateral column" conveys a centrifugal current proceeding from the prominentiæ lentiformes, corpora striata, optic thalamus, and medullary matter of the cerebrum (of which it cannot be said with certainty that it is a motor impulse), towards that side of the body opposite to the diseased half of the brain, but to the same side on which the fasciculus conducting this current is placed in the spinal column. This track is found to be diseased secondarily throughout, in cases of chronic apoplexy and other encephalic affections.

5th. A second fasciculus proceeds from the crus cerebri, and through the pons Varolii of the same side, as longitudinal fibres; but instead of crossing in the medulla oblongata, as was the case with the preceding pyramidal track, this second fasciculus descends on the same side of the spinal cord, as an internal division of the anterior column, where, however, its secondary affections terminate rather higher than those of the posterior section of the opposite lateral column. This we call the "enveloping track of the anterior column."

6th. The "enveloping track of the anterior column" conveys an impulse in a centrifugal direction to that side of the body opposite to the disease of the brain, and likewise opposite to the conducting track of the spinal marrow; and brought from the prominentiæ lentiformes, and corpora striata. This track probably conveys a motor impulse, and it is found secondarily affected when disease exists in one or both of the last-mentioned ganglia of the brain.

7th. With the exception of the above-mentioned tracks, neither the grey matter nor any other of the fasciculi was found diseased secondarily to affection of the brain.

8th. It is not decided whether the motor impulses, proceeding from the cerebrum, are conducted downwards through these two above-mentioned tracks alone, or seek some other way.

9th. The internal section of the posterior column continues through the soft fasciculi of the crura, and appears to reach its final termination on the floor of the fourth ventricle. By this track a centripetal nervous current is conducted, and it is found secondarily diseased above that point in the spinal cord at which effusion has destroyed the conducting power and arrested the centripetal stream.

10th. A second track, likewise centripetal, is found in the posterior half of the lateral column, and consequently a deposition of granular cells within this track, above a point at which an affection of the spinal cord may have occurred. In this posterior half there is both a centripetal and centrifugal conduction. The fasciculi united in the posterior half of the lateral column separate in the medulla oblongata, the centrifugal coming from the pyramids, whilst the centripetal in the medulla, directing itself always more backwards, mounts to the corpora restiformia.

11th. With the exception of the centripetal tracks mentioned in Nos. 9 and 10, neither the grey matter nor any other fasciculi of the spinal cord were found secondarily diseased.

12th. Whether through these two tracks the sense of muscular tonicity or ordinary sensation is manifested, remains at the present unascertained.

13th. The remaining fasciculi of the spinal cord are to be considered as separated in their anatomical and physiological character from those that have been treated of above. In the first place, the separation in the cervical portion of the spinal marrow exhibited between the external and internal sections of the anterior column by the sulcus intermedius anterior, is established as a complete division of those parts extending to the lowest extremity of the spinal cord. The same is probable with regard to the separation of the posterior column into two lateral sections by the sulcus intermedius posterior, although this is only demonstrated so far as the fourth thoracic pair of nerves. A similar division is found between the anterior and posterior sections of the lateral column, not exhibited, however, by any external mark of separation. Each half, therefore, of the spinal cord includes six fasciculi. Secondly, it is evident that these fasciculi do not conduct a centripetal current originating in either the lower extremities or the lower section of the trunk; perhaps they may serve for such currents from the upper extremities, or the superior portions of the trunk, but this is not probable. And it is yet undecided whether these tracks are used by centrifugal stimulation, having its origin in special portions of the cerebrum or cerebellum.

14th. The grey matter is not subject to the formation within it of these abnormal cells; from which, however, no conclusion can be absolutely drawn with regard to its powers of conduction.—*Transactions of the Imperial Academy of Science, Vienna*, 1851.

A SYNOPSIS

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE PRECEDING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

ASCITES.—Whenever ascites is complicated with gastro-intestinal irritation, and where digitalis cannot be administered internally, the decoction applied as a fomentation acts as a most powerful diuretic, and may be used with great success. (M. Andral, p. 48.)

FEVER.—As a tonic, guaco (Mikania guaco) is a most valuable drug after the fever has passed off: its effects were magical, where quinine produced restlessness, thirst, and headache. (Dr. E. W. Pritchard, p. 250.)

GOUT, *Acute*.—Infuse 32 grammes of ash-leaves in a sufficient quantity of water. Let the dose be taken at bed-time, early in the morning, and between breakfast and dinner. Continue it also for eight days after the symptoms have disappeared.

Chronic.—Take the same doses as above, night and morning, for a long period. Fits of gout may be indefinitely postponed by having recourse to this treatment—say for eight or ten days in every month.

RHEUMATISM.—Give an infusion of ash-leaves (Fraxinus excelsior). It possesses the advantages without the inconveniences of colchicum. Generally under its use, at the end of four or five days, or sometimes sooner, the pain, redness, and swelling visibly diminish in intensity, or even disappear. Each dose of the powdered leaves ought to be infused for three hours in boiling water, and before taken should be strained through a linen cloth, and sweetened to taste. Dr. Otterbourg says that 32 grammes, infused in a sufficient quantity of water, may be taken several times during the day. There is no need to change the mode of living. (Drs. Pouget and Peyraud, p. 249.)

Rheumatic Fever.—Colchicum, calomel, and opium, along with the free use of alkalies, are the main remedies; the latter especially, because probably there is an acidulous state of the blood. To alleviate the pain of articular inflammation, warm alkaline and opiate fomentations are valuable. The best form for the latter is ℥j. of carbonate of potash, dissolved either in a pint of decoction of poppies, or of rose water, to which 6 drachms of Battley's solution are added. The relief from this is said to be almost immediate. (Dr. Fuller; p. 43.)

AFFECTIONS OF THE NERVOUS SYSTEM.

CHOREA.—In children, under fourteen years of age, give from half a grain to a grain, three times a day, of the ammonio-sulphate of copper. It succeeded where the sulphate of zinc and the sesquichloride of iron had completely failed. It is not a novel remedy, but it is much neglected. (Dr. Hamilton Roe, p. 248.)

NEURALGIA.—In a severe case of this painful disease, a solution of 15 grains of acetate of morphia in ℥j. of creasote was introduced to the supra-orbital nerve, and along the course of the temporal, malar, and buccal nerves, by four punctures of an instrument made for that purpose. In a minute all pain from the disease ceased. In another case of *neuralgic sciatica*, the same plan of narcotic inoculation was followed by making one puncture behind the trochanter, and one half way down the thigh. Blisters are very valuable, but more so when the raw surface is sprinkled over with one of the following powders every six hours:—Morphia hydrochl., gr. j.; pulv. acaciæ, gr. xij. In pulv. iv., dividendus. This plan is very

valuable in acute sciatica. Acetic æther may be also painted over the painful nerve. Chloroform may be applied, by soaking lint with it, and placing it upon the painful part, and covering it with oiled silk so as to prevent evaporation; or an ointment made with 3j. of chloroform and ʒj. of lard may be smeared over the painful nerve. (Dr. E. Morris, p. 229.)

Facial.—Rub a piece of the following ointment, of the size of a walnut, over the affected part. Chloroform, 20 parts; prussiate of potash, 10 parts; and lard 60 parts; an oiled-silk cap is then to be worn for some hours. (M. Cazenave, p. 59.)

Spinal Exhaustion.—For this condition, strychnia is one of our best tonics, improving the general health, and conducing to the recovery of strength and flesh. It may be given in minute doses three times a day, in the midst of meals, for many months, in the following formula:—Strychniæ acetatis, gr. j.; acidi acetosi, ♏xx.; alcoholis, 3ij.; aquæ destillatæ, 3vi. M. Of this ten drops, containing 1-50th of a grain, may be given three times a day. The best plan is to begin with five, and go on to fifteen. (Dr. Marshall Hall, p. 58.)

Tetanus and Hydrophobia.—From the experiments of Dr. Marshall Hall, he arrives at the two following practical conclusions:—1st. That the tetanic patient be preserved from all external excitement absolutely. 2nd. The hydrophobic patient, whilst equally preserved from excitement, should be submitted to efficient tracheotomy. (Dr. Marshall Hall, p. 59.)

Tic Douloureux.—Give the following in doses of two tablespoonfuls three times a day; or three tablespoonfuls at once, if the pain is severe:—℞. Ferri potassio-tartrat. ʒij.; vini opii ♏lxxx.; aquæ cinnamomi ʒviij. M. (Mr. J. W. Beaumont, p. 59.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Aneurism.—Mr. Hodgson, President of the Medical and Chirurgical Society, commenting on a case of popliteal aneurism, read by Dr. Munro, said, that ample experience had now proved that *long-continued moderate* pressure is all that is required to bring about the cure of this disease, and not such a degree of violent pressure as would mechanically prevent the flow of blood through the vessel. (Mr. Hodgson, p. 123.)

Varicose Veins.—Mr. Henry Lee operates upon these cases in the following manner:—He first introduces a needle under the vein to be obliterated, and leaves it there for a few days. 2nd, after that time, when the blood on either side of the needle has become coagulated, the operation is completed by dividing the vein by a subcutaneous incision. The vein must be blocked up before incision is performed, and then we know that no abnormal product, as pus, can pass into the current of the circulation from the division of the coats. Hence the blood must be kept at rest for a certain time in the vein. By this plan we are assured that the coagulum so formed consists of blood alone, and no other vitiated fluid. (Mr. H. Lee, p. 124.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Tracheotomy.—Dr. Henry Thompson has recently invented an instrument (see wood-cut, p. 136) by which tracheotomy is much facilitated. It somewhat resembles a pair of dissecting forceps, having, at one extremity, an angle formed about an inch and a half in length. The points are furnished with a fine cutting edge, and meet so accurately that one blade is formed as it were together. The cricoid cartilage is first felt for, and at a quarter of an inch below its inferior margin, the blade portion is to be introduced *transversely* between the rings of the trachea; then, by means of a screw, the blades are separated, and the wound dilated. A full-sized curved tracheal tube, of moderate length, and having an additional opening in the upper wall, about the centre, is then to be introduced into the wound. (Dr. H. Thompson, p. 136.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

ANUS, *Fissure of*.—It is now well known that a small incision, slightly exceeding the length and depth of the little ulcerated fissure, is sufficient for its remedy, without any after treatment, or restriction from exercise, beyond a day or two of quiet. (Prof. Syme.—*Monthly Journal, April*, 1853, *p.* 314.)

DYSPEPSIA.—Excess of acidity of the stomach being one of the most common causes of dyspepsia, it should be neutralized. In such cases, alkalies, with bitter tonics, and the direct introduction of animal oils in excess, are indicated. On the other hand, the quantity of gastric juice may be diminished, as from overtasking the powers of digestion at feasts, or in the feeble digestion of old people. In acute cases, a stimulant, as the moderate use of generous wines after dinner, is useful. Old people thus afflicted should give up drinking tea, and should take a little weak brandy and water at bed-time. In chronic cases, acids are indicated, especially muriatic acid. In chlorotic females, the tinct. ferri co. may be given. When fatty matters are difficult to digest, alkalies, especially the liq. potassæ, with vegetable tonics, may be given. When bile is deficient, give gentle mercurial purges, with extract of taraxacum, or the compound rhubarb pill—this last favours the flow of bile into the upper part of the alimentary canal. Dr. Clay, of Manchester, recommends the administration of ox-gall. Excess of bile, on the other hand, is to be treated by drastic purgatives, diuretics, and diaphoretics, to cause excess of excretion. Exercise, by increasing the action of the lungs, and relieving the liver in its office of separating hydro-carbon, is to be insisted upon. (Prof. J. H. Bennett, p. 82.)

FISTULA-IN-ANO.—After the incision of fistula, to prevent the edges of the wound from uniting, touch them with the nitrate of silver. By this plan there is no necessity for interposing tents, lint, or other material. The application may be made at first every, and then every other, morning. (M. Alquié, p. 143.)

HARE-LIP.—The ages at which the operation for hare-lip are most successful are —somewhat advanced age; next, infancy; and, lastly, childhood. If the jaw itself projects, a variety of opinions have been offered as to the best means of removing the obstruction, some advocating the removal of the portion, others not. Genesoul has recommended the bending back of the projecting portion, and Mr. Haynes Walton has put this recommendation into practice with success by partially dividing the projection, and then pressing it backwards. (Mr. Haynes Walton, p 139.)

HEMORRHOIDS.—Give an opening pill at bed-time, and an aperient draught in the morning, so as to bring the parts into view; then apply nitric acid to each pile freely by means of a mop of lint, having some liq. potassæ in a dossil of lint ready lest the caustic should touch the sound skin. In the course of a week, if the vitality of the part is not completely destroyed, re-apply it. Give an anodyne at night and an aperient after the lapse of two or three days. (Dr. W. Cooke, p. 144.)

Internal.—Of all means the ligature, when properly applied, affords the relief desired with most ease to the patient, with the most permanent advantage, and with the greatest security from danger. (Prof. Syme, *Monthly Journal, April*, 1853, *p.* 313.)

HERNIA.—The rule of practice should be that in cases of strangled hernia the parts should be freed with the least possible delay. The taxis should not be resorted to where constitutional symptoms have manifested themselves, or in those cases where the local pain or tension show the encroachment of lesions, which, if unchecked, must prove fatal; or, lastly, where strangulation has been protracted beyond a few hours. (Mr. J. Gay, p. 139.)

LEAD COLIC.—Compound extract of colocynth, with calomel and opium, is the best purgative. To prevent the constitutional effects of the calomel, combine these remedies with croton-oil. Acute cases are relieved by a bath containing the sulphide of potassium in the proportion of 4 ounces to 30 gallons. In the *paralysis from lead* the same bath is valuable, along with the galvanic form of electricity. The way in which this is produced is as follows:—The positive metal is to be considered the lead in the nerves, muscles, and tissues, and the negative metal plates of copper attached to the limb itself, a weak solution of acetic acid forming the oxidating link. Acetic acid is chosen because the acetate of lead is soluble. (Dr. J. Alderson, p. 232.)

SARCINA VENTRICULI.—One indication necessary to be fulfilled in the treatment of this disease is to destroy the fungus by a regular and systematic exhibition of alkalies, thereby removing the acidity so essential to its formation and development, and then to employ some remedy capable of destroying its growth. This may be done by giving bicarbonate of potash and infusion of quassia, and afterwards the sulphite of soda. The operation of this salt seems to be that the sulphite being decomposed in the stomach by the acids therein generated, sulphurous acid gas is liberated, the destructive effects of which upon parasitic formations like the sarcina is well known. (Dr. Hassall, p. 83.)

STOMATITIS (*Ulcerated*) *and* CANCRUM ORIS.—In a severe epidemic of this disease, the cases were treated by a mild aperient of magnesia and rhubarb, and by chlorate of potash dissolved in water sweetened with syrup, in doses of 4 grains every fourth hour. The mouth was also washed with a weak solution of chloride of sodium. They all recovered in about six days. (Dr. J. H. Babington, p. 83.)

TONSILS, *Enlargemnet of*.—This condition frequently produces great inconveniences, impeding respiration, especially during sleep, rendering the voice husky, inducing a tendency to sore throat, and occasionally producing deafness. They may be removed with perfect safety by the knife, and such an amount of speedy and permanent relief afforded as justly to merit the title of a substantial improvement in the practice of surgery. (Prof. Syme, *Monthly Journal, April*, 1853, p. 310.)

VOMITING.—Vomiting, either from sea sickness, from overflow of bile, from disease of the liver, and in some cases obstinate vomiting from other causes, may be relieved by a few doses of chloroform. Three or four drops well shaken up with water may be taken for a dose.

The same dose may be likewise used as a preventive against sea sickness. (Dr. T. Inman, p. 83.)

AFFECTIONS OF THE URINARY ORGANS.

ALBUMINURIA.—Albumen is to be detected by nitric acid and heat. Albumen may be present in cholera, puerperal fever, pyelitis, gestation, or inflammation of urinary mucous membranes, but especially in

1st. *Acute Desquamative Nephritis*.—Here is inflammation or congestion characterized by fibrinous casts with blood discs, nuclei, and epithelial cells, united by fibrinous matter.

2nd. *Chronic Desquamative Nephritis*.—A chronic form of last. By long-continued shedding of epithelium with the urine, in a more or less disintegrated state.

3rd. *Waxy Degeneration of Kidney*.—By the discharge of waxy casts in urine, varying in size. All the cases of this kind, which Dr. Johnson has seen, have recovered.

4th. *Non-desquamative Disease*.—The elimination of some poison, as scarlet fever. There is congestion or inflammation and escape of serum, but no exfoliation of epithelium.

5th. *Fatty Degeneration*.—Large quantities of oil globules, mixed with epithelial cells and tube casts. Oil cells are known by their rounded uniform shape, and by their broad black margins, produced by their strong refractive power. (Dr. G. Johnson, p. 92, 97.)

DIABETES.—The diet may consist of every description of meat, with the usual sauces, to the exclusion, however, of all feculent and saccharine substances. Fish of all varieties, and eggs, in the several modes of preparation, are proper. The Bordeaux wines are the best. Beer should not be drunk. Coffee, with a little cream, is a good drink. To relieve thirst, Seltzer, spa, Vichy, or soda water may be taken; but acid drinks are objectionable. The patient should eat slowly, masticating his food well, and taking it in moderate quantities. A flannel bandage round the epigastrium assists in reducing the stomach to its normal dimensions. The patient should be completely clothed in flannel. General frictions are also useful. Exercise should be taken as the strength permits. Along with these

means carbonate of ammonia may be taken, assisted by opiates, in doses of from 77 to 230 grains in the 24 hours. Emetics are often useful at the commencement, and the disturbed functions of the liver may be modified by aperients, of which ox-gall is the best. (M. Bouchardat, p. 101.)

Give the permanganate of potash, beginning with 2 or 3 grains three times a day, and add one grain to each dose every third day, unless it be found to disagree. (Mr. G. Sampson, p. 103.)

Incontinence of Urine.—In a case of this kind, which had lasted for five months, from paralysis of the neck of the bladder, after the internal administration of strychnine had failed, a solution was injected into the bladder (0·50 centig. of strychnine to 500 centig. of water.) Complete recovery was the result. (Dr. Panel, p. 104.)

Testicle, *Air-Compressor of the.*—[For a detailed description of Mr. Hutchinson's apparatus for this purpose see page 153. It is intended to be used in cases of chronic and subacute inflammation of the gland, varicocele, some peculiar forms of hydrocele after paracentesis, and possibly malignant affections.]

Fungus of.—This was once constantly removed by the knife or caustic. It admits of recovery by inducing absorption of its interstitial effusion. To effect this, an easy method is to detach the scrotal integuments from their subjacent connexions sufficiently for allowing them to unite over the tumour, and thus subject it to the influence of pressure. (Prof. Syme, *Monthly Journal, April*, 1853, p. 311.)

Urine, *Pus in.*—When the urine contains pus it is muddy from the first; hence the difference between this and urine containing lithate of ammonia, the latter only becoming muddy after a certain time. Phosphatic urine is also muddy when passed, but in this case it is much paler; and after standing some time there is a deposit as in the case of pus, but in phosphatic urine it is white instead of being yellow, and flocculent and light instead of being thick and heavy. A little acid renders phosphatic urine clear, while if pus be present it increases the turbidity. In cases of phosphatic deposits also the urine is generally alkaline; in purulent, the urine is generally slightly acid. The pus is also rendered glairy and stringy by liq. potassæ. Again, if the urine be rendered acid by applying heat, the pus coagulates. Lastly, examined by the microscope, it consists of two essential parts, liq. puris and pus globules, which are characteristic. (Dr. R. B. Todd, p. 89.)

AFFECTIONS OF THE SKIN, &c.

Acne and Boils.—These, depending on similar states of the constitution, may be treated alike. Great success has been obtained at the Hospital for Diseases of the Skin, by the combination of ferruginous salts with saline aperients. In *acne simplex* and *punctata*, Mr. Startin prescribes ferri sulphat. gr. ij., magnes. sulphat. ʒj., ter. die sumend.: an ointment of ammonio-chloride of mercury gr. x. ad ʒj., to be applied every night. For *acne indurata*, the iodide of iron in doses of gr. ij., three times daily. For the *furunculous epidemic*, so rife of late years, full doses of iron with saline purgatives—mist. ferri acid. ʒiij. ter die. (Mr. J. Startin, p. 161.)

Chilblains, *Broken.*—Use the "Baume Chiron de Lausanne," which is made as follows:—Olive oil, 10 oz.; Venice turpentine, 2 oz.; yellow wax, ½ oz.; boil together, strain, and add balsam of Peru 2½ drachms; camphor, 9½ gr.; stir constantly until cold.

Unbroken.—Rub unbroken chilblains with the following balm night and morning:—Rectified sp. turpentine 1 drachm, sulphuric acid 15 grains, olive oil 2½ drachms; mix. (M. Cazenave, p. 161.)

Eczematous Eruptions.—*Chronic.*—Apply cod-liver oil externally. (Mr. Paget, *Med. Times and Gazette, Jan.* 1. 1853, p. 23.)

Erysipelas.—In the treatment of this disease by the employment locally of the tincture of iodine, Mr. Norris arrives at the following results:—That its application over the whole of the affected part appears to exert a specific control over the disease; that the earlier it is applied the more manifest is the result; and that as often as the skin becomes pale from the vaporization of the iodine it should be repeated, notwithstanding the somewhat severe smarting which oftimes immediately ensues. (Mr. H. Norris, p. 157.)

Apply the following to the skin:—Collodion 30 parts, castor oil 2 parts; mix. Apply it once a day for three successive days to the parts attacked. A cessation of the burning pain and the disappearance of the redness take place. (M. Robert Latour, p. 156.)

GANGRENA SENILIS.—Lessen the tendency to overaction by soothing means; confine the patient to bed; debar him from animal food in every form, with the exception of milk. Supply him with doses of morphia in proportion to his pain and restlessness. Avoid giving him stimulants, and cover the affected part with a linseed poultice. Under this plan the distressing symptoms gradually disappear, the slough ceases to extend and the sore cicatrizes soundly. (Prof. Syme, *Monthly Journal, April*, 1853, p. 302.)

NÆVUS.—Mr. Startin's new plan of treating these cases is by applying a ligature. The base of the nævus is surrounded by a subcutaneous ligature composed of a single thread, to the ends of which a band of India rubber is attached. Elastic traction is thus kept up until the thread cuts its way out. It is not applicable to these two kinds of cases: 1. Where the disease is seated on parts which, being pendulous and not firmly fixed, cannot bear the necessary traction; such as the ear, the lips, and the genital organs. 2. When the nævus is purely cutaneous; for if the morbid vascularity be derived from the skin itself, it is obvious that division of the subcutaneous tissues will not cure it. (Mr. J. Startin, p. 131.)

SCIRRHUS.—Give from one-eighth to one-fourth of a grain of ammonio-sulphate of copper three times a day. It may be continued for many months. (Dr. H. Roe, p. 248.)

ULCERS, *Indolent and Callous.*—Instead of employing the expensive and troublesome plan of strips of adhesive plaster, apply a large blister. This quickly relives the hard swelling of the limb, and allows speedy healing and sound cicatrization without further trouble. (Prof. Syme, *Monthly Journal, April*, 1853, p. 301.)

Cancroid.—Give from one-eighth to one-fourth of a grain of ammonio-sulphate of copper three times a day. It may be continued for many months. (Dr. H. Roe, p. 248.)

Varicose.—Apply simply the common black-wash lotion. Under this plan they generally readily heal. (Prof. Syme, *Monthly Journal, April*, 1853, p. 301.)

Of the Face, Malignant.—Pour sulphuric acid on powdered saffron, and apply it in a soft state to the ulcerations. The paste dries and falls off in two or three days, and carries with it the eschar. It will be necessary to apply the paste several times. (M. Cazenave, p. 156.)

Of the Leg.—The out-patients of the London Hospital are treated as recommended by Mr. Critchett, by strapping the whole leg from the toe to the knee with inch-wide strips of plaster, and applying a bandage as tight as can be borne. The plaster should be made of unirritating material, and spread on unglazed calico. In the London Hospital the emp. plumbi is used. At St. Bartholomew's, Mr. Wormald directs the application of a folded compress of lint over the trunk of the internal saphena, immediately below the knee, to be fixed with considerable tightness, by means of a broad strip of sticking-plaster. The same object is gained yet more effectually by Mr. Startin's elastic spiral bandage, as used at the Hospital for Diseases of the Skin, (see Vol. 23.) These ulcers are essentially of an inflammatory character, and the blistering the edges by some blistering fluid (Bulleyn's is the best) is often followed by remarkable benefit. At the Hospital for Diseases of the Skin the patient is put under a continued course of iodide of potassium, or biniodide of mercury, and the following ointment is applied to the ulcer:—Hyd. bisulphuret, hydrarg. nitric. oxyd. aa. ʒss.; creasote ℥xx.; adipis recentis ʒxvi. Misce. (Mr. Critchett, Mr. Wormald, Mr. Startin, p. 154.)

In an obstinate case of this disease, Mr. Gay, finding the skin immediately in the neighbourhood of the ulcer very tense, and unable to yield further to the contracting power of the scar, divided that part of the skin where the tension existed in the greatest degree. Three weeks after, the ulcer was quite closed. Mr. Gay observed that it was only by altering the direction of the traction and transferring it to more healthy and moveable parts, that any advantage can be expected from measures similar to the above. (Mr. J. Gay, p. 160.)

, WARTS.—In the case of a girl affected with gastralgia, whose hands were covered with warts, carbonate of magnesia was given. Two months after, though the stomach affection was unaltered, the warts had disappeared. In another case, the same dose, a teaspoonful night and morning, produced a similar effect in five weeks. (Dr. Lambert de Haguenean, p. 161.)

WOUNDS, *Incised.*—For a long time these have been treated by the edges being brought together by strips of adhesive plaster, and the wound covered with pledgets of lint and tight bandages: in this way abscess was generally produced. Withhold all impermeable covering, but apply pressure diligently, so as to maintain the raw surfaces in apposition, so as to be within reach of the adhesive effusion by which their union is effected. (Prof. Syme, *Monthly Journal, April*, 1853, *p.* 302.)

AFFECTIONS OF THE BONES AND JOINTS, &c.

BURSA *of Flexor Tendons of Wrist.*—This affection sometimes renders the fingers quite useless: its removal was formerly considered impracticable. It may be cured easily and certainly by making an incision about an inch or a little more in length, through the integuments and subjacent textures, including the annular ligament of the wrist. (Prof. Syme, *Monthly Journal, April*, 1853, *p.* 302.)

CARIES *of the Ankle Joint.*—Amputation of the leg, below the knee, used to be the common operation for caries of the ankle-joint and bones of the tarsus; but when the disease does not extend above the articulating extremities of the tibia and fibula, the foot may be removed, and the thick integuments about the heel preserved to form a cushion for supporting the weight of the body. Besides this, there is much less fatality about this operation than in that of amputation of the leg. (Prof. Syme, *Monthly Journal, April*, 1853, *p.* 303.)

FRACTURE *of the Femur.*—Mr. Butcher has introduced a most important and useful addition to the splint commonly termed Liston's. The principle is to keep the limb thoroughly extended, and thus to prevent the shortening more efficiently. This he has effected by means of a long screw, conveyed through a socket riveted vertically on the side of the splint. The lower end of the screw terminates in a cylinder, which is received into the centre of a piece of wood underneath the splint. By a few turns of the screw, the splint may be elevated or depressed at pleasure. Another advantage is, that the splint can be readily reversed, the screw changed, and its adaptation to either limb be effected. It will be easily understood, however, if the reader turns to the drawing exhibiting this mechanism at p. 106.

Mr. Fergusson, at a meeting of the Royal Medical and Chirurgical Society, said, that the swinging apparatus, commonly used for fractures of the leg, was equally applicable for fractures of the lower part of the thigh, and also in fractures of the knee-joint. Mr. Luke thought, as a rule in fractures of the thigh, it would not be so useful, because both the fractured ends could not always be placed on the apparatus. Mr. Hodgson, the president, considered the swinging plan of treatment of great value in fractures of the patella. (p. 112.)

Of the Leg.—In a case of this accident, where constant displacement of the bones was produced by the extreme spasmodic action of the muscles of the calf, after all means to remedy this state of things had been tried in vain, the tendo achillis was divided with the most complete success. (Mr. Birkett, p. 110.)

Of the Thigh.—Perhaps the best mode of treating fractures of the thigh is to place the patient on such a bed as will admit of the back being elevated or depressed without at all interfering with the relative position of the thigh and trunk. Mr. J. T. Hester has invented such an apparatus, resembling in its various positions a double-inclined easy reclining chair, with means adapted to shorten or lengthen the part on which the fractured bone is placed. (p. 109.)

[Dr. Wm. Highmore, of Sherborne, Dorset, has invented a new splint for fractures of the lower extremities, which is described and figured at p. 108]

VENEREAL AFFECTIONS.

BUBO.—When it is quite ripe pierce it in the most tense part, and in the direction of the ileo-pubic axis, by a seton needle carrying four threads. The two apertures

of entrance and exit of the needle must be formed beyond the perimeter of the inflamed skin. The pus is evacuated by gentle pressure, and the space between the openings is to be filled up with dossils of lint to keep up the compression. In the evening, the abscess is to be again emptied, and the pad re-applied. The process to be repeated twice daily. The threads should not be withdrawn until free discharge is secured. The time required for the cure is from 10 to 20 days. (M. Bonnafont, p. 163.)

Gonorrhœa.—Inject a solution of tannin, 3ss. to ʒij. to ℥ij. of water. The injection to be used three or four times a day. Ten cases were thus cured in from six to nine days. No pain followed its use. (Dr. Lange, p. 162.)

Syphilis, *Secondary and Tertiary.*—If for primary syphilis mercury has been given, and for the secondary and tertiary forms the iodide of potassium, two effects are produced—1st, the compounds of mercury fixed in the body are rendered soluble and active; 2nd, a form is given them which allows their rapid elimination. In this case the patient suffers from the effects of mercury twice over. If no mercury has been given, the iodide of potassium will cure the secondary and tertiary forms of syphilis by acting as a poison on its own account, which may be easily regulated according to the power of the patient. The dose to begin with, in this case, may be 15 grains a day, increasing it if the patient bear it well. (M. Melsens, p. 242.)

Venereal Ulcer.—Instead of the violent treatment which has been commonly employed for this kind of ulcer—such as rubbing over the surface with caustic potass, and pushing it into the several sinuosities—apply a blister over the sore, and administer small doses of iodide of potassium to the extent of two grains twice or thrice a day. (Prof. Syme.—*Monthly Journal, April*, 1853, p. 302.)

The following is the composition of Plenck's Mercurial Balm for dressing venereal ulcers:—Mercury 1 oz., Venice turpentine ½ oz., lard 3 oz., calomel 17½ grains, elemi ointment 3 oz.; mix. (M. Cazenave, p. 162.)

AFFECTIONS OF THE EYE AND EAR.

Artificial Tympanic Membranes.—In 30 or 40 cases where the membrana tympani had been perforated, and in consequence of which the sonorous undulations did not strike the tympanum with sufficient force, Mr. Toynbee, with great benefit, closed the tympanum by artificial means. To construct these artificial membranes he used thin layers of vulcanized India-rubber or gutta-percha. The septum was passed down, and adjusted by means of a fine wire or stem of some other material. All symptoms of inflammation should be carefully reduced before they are applied. (Mr. J. Toynbee, p. 165.)

Deafness, *Atonic.*—Drop 5 drops of the tinct. guaco into the ear, secured by a small plug of gutta-percha, coated with collodion. Three drachms of the tincture also may be diluted with six ounces of water. Two tablespoonfuls to be taken three times a day. In four days substitute cotton wool soaked in the tincture for the plug. If the hearing is deficient in both ears, follow the same plan with both. This treatment, in a bad case of this kind, pursued for three weeks, restored the functions of the ear. The tincture may be made by digesting ℥ij. of powdered leaves in Oj. of sp. ten. for eight days, in a gentle heat, and afterwards filtering. (Dr. E. W. Pritchard, p. 250.)

Ophthalmia, *Strumous.*—Smear the surfaces of both eyelids over with the solid nitrate of silver, previously moistening the lids. Painting the surfaces over with the tincture of iodine has also the same effect, and is perhaps more convenient. (p. 164.)

MIDWIFERY AND THE DISEASES OF WOMEN.

Abscess *of the Breast, Chronic.*—The sinuses from this disease usually run in several directions through and behind the gland, and are very difficult to close. In a case under Mr. Birkett poultices were applied until the irritation was diminished, and then three grains of iodide of potassium in ℥j. of infusion of gentian

was taken three times a day. The breast was wrapped in lint spread with ung. plumbi iodini, and the whole supported by a bandage. In a fortnight afterwards all the sinuses were injected with the tinct. iodini by means of a tube carried to the end of the sinus. In three weeks afterwards the sinuses had completely healed. If the skin of the nipple in a pregnant patient should be found delicate, Mr. Birkett advises the application daily of alum wash, or some other astringent. This plan will prevent irritation following. Sometimes milk abscess depends on the non-development of the nipple. In this case a shield should be provided beforehand, and the patient properly instructed as to its use. (Mr. J. Birkett, p. 203.)

Chapped Nipples, *Balm for.*—Olive oil, ℥ x.; Venice turpentine, ℥ ij.; yellow wax, ℥ j.; alkanet root, ℥ ss.; boil together, strain, and add of balsam of Peru, ʒijss.; camphor, 9½ gr.; stir constantly until cold. (M. Cazenave, p. 161.)

Dysmenorrhœa.—These cases may be treated by borax, along with a stomachic, as by the following formula:—Magnes. carb., 5 grains; pulveris rhei, gr. ij.; sodæ biborat., gr. x.; infus. calumb., ℥ j. If sickness is produced, acid. hydrocyan. dil. ♏ ij., may be added to the dose. Emp. ammon. c. hydrarg. may also be applied to the loins. The class of cases to which the treatment by borax seems to be specially adapted are those in which no organic disease exists, but which, occurring in tolerably robust subjects, are attended by slight pyrexia, pain in the loins, the expulsion of flakes and shreds of lymph, and the other signs of a disease of active congestion rather than mere nervous derangement. (Dr. J. Henry Bennet, p. 199.)

Hemorrhage *after Delivery.*—In several cases which Dr. Ramsbotham has met with there have been most severe after-pains, with great hemorrhage, though the uterus was still firm and comparatively small. His explanation is, that a clot having filled the cavity of the uterus, the womb is unable to expel the offending mass. The more fluid parts are squeezed out, and the firmer remain behind, clinging with such tenacity to the uterine walls as to be almost as difficult of removal as a piece of adherent placenta. The treatment of such cases is to introduce the hand, remove the clot from the cavity of the uterus, and immediately the after-pains and the hemorrhage dependent thereon will cease. (Dr. F. H. Ramsbotham, p. 180.)

Labour, *Difficult; Forceps in.*—From the experience of several cases of difficult labour, Dr. Murphy asks, Whether, in the ovate deformity of the pelvis, we are justified in perforating the head and destroying the child, when the head is fixed in the brim of the pelvis? This question, he thinks, may be answered in the negative. Again: When the head has not entered the brim of the pelvis, what amount of space in the conjugate axis will justify the attempt to save the child, either by the long forceps or by turning? Dr. Murphy thinks we may do so if it exceed 2½ inches. (*Association Medical Journal, March* 28, 1853, p. 229.)

Tedious.—The use of the tartrate of antimony in tedious labours is by no means a secret among accoucheurs. Mr. Stedman mentions several cases, amongst a very many, in which he has found it of benefit. His mode of giving it is a quarter of a grain every half hour, along with ten grains of nitrate of potash. The first dose usually produces sickness. (Mr. J. Stedman, p. 178.)

Menorrhagia.—During an attack of the hemorrhage, let the patient take of ext. matico alcohol gr. v., plumbi diacet. gr. ij. M., ft. pil. ij. quartis horis. ℞. Secalis cornuti, sodæ biborat., aa ʒj., mist. acaciæ ℥ ss. aquæ cinnam. ℥ iij M. ft. haust. sumat demid. cum pilulis. Mr. Hooper prepares a combination of the dincetate of lead with the spirituous ext. of matico, than which no styptic appears more powerful. (Dr. Rigby, *Med. Times and Gazette, Nov.* 20, 1852, p. 509.)

Premature Labour, *Induction of.*—The following is the method of Professor Kiwisch:—A piece of India-rubber tubing, about eleven feet long and half an inch in diameter, is connected with a straight tube from an injecting apparatus five or six inches in length, the latter forming the extremity of the syphon. A vessel containing about two gallons of water of about 110° Fahr. is placed nine or ten feet from the ground, the patient being placed in an empty hip-bath. The proper end of the tube is to be passed into the vagina, and directed towards the os uteri, where it is to be held steadily. After exhausting the tube, the other end is to be placed in the warm water. The stream flows with considerable force against the os uteri, and continues until the whole contents of the vessel are discharged. Two

gallons of cold water are then to be placed in the vessel, and discharged in the same way. The douche may be repeated if necessary on the next day. (Dr. W. Tyler Smith, p. 169.)

In another case the plan adopted was somewhat different. The common elastic bottle-syringe, manufactured by Robertson, of Dublin, was used. To this was attached a flexible tube, with a bone pipe at the end. This was introduced into the vagina, and directed against the os uteri. Tepid water was then forced, by means of the syringe, along the tube, from some convenient vessel, another smaller one being placed to catch the water as it pours from the vagina. The process had to be continued about five minutes. A second and third application was made on successive days; and on the third, labour came on at half-past three o'clock p.m., and terminated at half-past ten at night. (Dr. Shekleton, p. 172.)

Polypus Uteri.—In applying a ligature upon a polypus of the uterus, we might grasp some of the structure of the uterus itself. To obviate this, the neck of the polypus must be tied some distance below its attachment; for that portion of the stem left in connexion with the uterus will wither and come away in shreds, or be absorbed after the main bulk has been removed. The sensation of pain must, to a great extent, be our guide. If the patient complains much, the noose should be relaxed, and again drawn tight over the lower portion of the neck or body of the uterus. (Dr. F. H. Ramsbotham, p. 202.)

Prolapsus *of Anterior Wall of the Vagina*.—This condition is one of the causes in females of fetid-phosphatic-mucous urine. Dr. Golding Bird describes several cases he has met with, in which the cause had been overlooked. In one his brother, Dr. Frederick Bird, applied the actual cautery to the anterior portion of the vagina. After the slough came away, the contraction was sufficient to prevent the formation of the vesical pouch, and the result was most satisfactory. In another case the condition of the patient was relieved by introducing an injection of infusion of galls three times a day into the vagina, wearing an abdominal support with a perineal pad, and the administration of quina and iron with dilute phosphoric acid. (Dr. G. Bird, p. 193.)

Rupture *of the Perineum*.—The plan of Mr. Brown's operation is as follows: Having made a clean incision into the vagina, so as to separate from each side of the rent any portion of mucous membrane, three or four sutures were passed deeply through the parts, and attached to a piece of quill or elastic bougie on each side. Three or four smaller sutures might be passed also through the edges of the wound, so as to bring them into more certain apposition. To prevent the inner edges of the wound being drawn separate by the sphincter, and the lochia allowed to penetrate into the wound, Mr. Brown divides this muscle; and this he considers one of the most essential features of his operation. In all cases he administers opium, which allays the irritability of the nervous system, and exercises a most salutary influence over the patient. He has never seen any harm arise from its constipating effects. (Mr. I. B. Brown, p. 196.)

MISCELLANEA.

Anthelmintics.—From some minute researches into the action and relative value of anthelmintics, the author advises that santonine should be given as a vermifuge, mixed with oil, in the proportion of from two to five grains to an ounce of castor oil. A teaspoonful of this should be given until an effect is produced. As auxiliary treatment, chloride of sodium, herring brine, mustard, onions, and garlic, may be employed. (Dr. Küchenmeister, p. 86.)

Bites *from Serpents*.—Rub the parts with the tincture of guaco, and give 3j. doses every ten minutes. This remedy is said to be unerring in its efficacy. (Dr. E. W. Pritchard, p. 250.)

Ferro-Manganic Medicines.—[For M. Petrequin's remarks on the diseases for which these medicines are useful, see p. 337. The formulæ for the various preparations will be found at p. 339.]

Goulard's Balm (*Oil of Saturn*).—Take of rectified sp. turpentine any quan-

tility, heat it *secundum artem*, dessat, &c. Used for dressing phagedenic ulcers, asthyma, some chronic eczemas, and rupia. (M. Cazenave, p. 162.)

Mercury, *Administration of*.—After mercury has been given for some time, a portion of it would seem to be retained in the system in the form of some insoluble compound. If iodide of potassium is now given, it combines with the mercury, forming a new and soluble salt dissolving out the mercury, and setting it once more afloat in the circulation. This new salt, a double iodide of mercury and potassium, is eliminated from the system along with the excess of iodide of potassium, so that the cure would then seem to be radical and complete. (M. Melsens, p. 240.)

Poisoning *by Laudanum*.—In a case of this kind, in an infant, the most beneficial effects were produced by the stimulus of galvanism kept up for a period of four hours, with intervals of different duration, immediately reapplying it when respiration seemed inclined to fail. One of the conductors was employed over the epigastrium, and the other conductor being taken in the right hand, one of the fingers of the left was placed in the mouth of the child between the teeth and gums, and as far back towards the fauces as convenient. The lowest intensity of current was used. (Mr. G. Kirk, p. 248.)

By Lead.—Neither sulphuric acid nor sulphates can serve as antidotes to slow poisoning by the salts or compounds of lead, the sulphate of lead being itself a slow but sure poison, capable of killing vigorous dogs in twenty or thirty days. (M. Melsens, p. 240.)

Mercurial.—It is important to know that iodide of potassium renders medical treatment in poisoning by certain salts of mercury more active, and may, therefore, occasion accidents. M. Dumas recommends, that when calomel (the chloride of mercury) is taken, and is wished to remain as such, common salt (chloride of sodium) should not be taken. When corrosive sublimate is taken (the bi-chloride), to prevent its being decomposed, sal ammoniac (the hydrochlorate of ammonia) is to be given with it. If doses of calomel are given to two dogs, and at the same time iodide of potassium is given to one of them, the dog so treated will die first. (M. Melsens, p. 242.)

Chloride of sodium (common salt) would seem to be of value in preventing the attacks of mercurial poisoning. Those workmen who are exposed to its influence, and who are fond of salt, resisting the contamination longer than those who are not. (M. Melsens, p. 242.)

INDEX TO PART XXVII.

PAGE

Abdominal parietes, cases of abscess of 323
Abortion, on the influence of lactation in causing 177
Abscess, mammary, treated by iodine injections 203
" of the abdominal parietes, Dr. Lever's cases of 323
Abscesses, secondary, on the mode of formation of 258
Acne, Mr. Startin's treatment of 161
Acute specific diseases, Dr. Jenner on the 26
Air-compressor for the testicles, Mr. Hutchinson's 153
Albuminuria, Dr. Johnson on 92
Alcohol, on a new kind of 343
Alderson, Dr. J., on the effects of lead upon the system 229
Alquie, M., his treatment of fistula-in-ano 143
Amenorrhœa, use of ferro-manganic medicines in 337
" uses of sulphate of nickel in 341
Amphibia, on impregnation of the ovum in the 214
Anæmia, use of ferro-manganic medicines in 338
Ancell, Mr. H., on tuberculosis 63
Aneurism, Prof. Fergusson on the treatment of 119
" Prof. Miller on the treatment of 120
" Dr. Munro on the treatment of 122
" Mr. Cock on the treatment of 121
" Mr. Hodgson on Dr. Munro's case of 123
Animal electricity, Dr. du Bois' experiments in 326
——— heat, Sir B. Brodie on the theories of 334
Ankle-joint, on the treatment of caries of 352
Anthelmintics, on the comparative value of 86
Anus, fissure of, Prof. Syme's treatment of 348
Aran, Dr. on chloroform in lead colic 84
Arthritic inflammation described 118
Artificial tympanic membranes, Mr. Toynbee on 166
Ascites, use of fomentations of digitalis in 48
Atkinson, Dr. J. G., on the cause and prevention of tuberculosis . . . 69
Babington, Dr. J. H., on chlorate of potash in ulcerated stomatitis . . . 83
Balfour, Dr. G. W., on the treatment of erysipelas by iron 157
Barclay, Dr. A. W., on sulphate of quina in fever 23
Barnes, Dr. R., on menstruation, conception, and lactation 177
Bean, Mr. D., his case of rupture of the uterus 179
Bennet, Dr. J. H., his case of chronic bronchitis complicated with dysmenorrhœa, 199
" Dr. J. H., on dysmenorrhœa 199
Bennett, Prof., his cases of rheumatism treated by lemon-juice 46
" Prof., on laryngeal and pharyngeal diseases mistaken for phthisis . 60
" Prof., on the pathology of rheumatism and gout 45
" Prof., on the pathology and treatment of dyspepsia . . . 82
Bernard, M., on elective elimination by the salivary and other secretions . 245
Bickersteth, Mr. E. R., his case of large hematocele of the thyroid gland . 256
Bird, Dr. F., on the diagnosis, treatment, and pathology of ovarian tumours . 221
" Dr. G., on prolapsus of the vagina as a cause of fetid, mucous urine . 193
Birkett, Mr. J., on chronic abscess of the breast and milk fistulæ . . . 203
Black, Dr. C., on mucous membrane—epithelium 81
Bladder, paralysis of, from over-distension after delivery 217
Blood, Mr. Lee on the consequences of a vitiated condition of . . . 258
" Mr. Richardson on fibrous concretions in 37
" use of ferro-manganic medicines in diseases of 337
Boils, Mr. Startin's treatment of 161
Bois, Reymond, Dr., his experiments in animal electricity 326
Bonnafont, M., his treatment of bubo 163
Bony tumour of the uterus 214
Bouchardat, M., on the nature and treatment of diabetes 101
Brain and spinal cord, Dr. Ludwig Turck on 343
" on the nature of concussion of the 243

	Page
Breast, chronic abscess of, treated by iodine injections	203
Bright's disease of the kidney, Dr. Johnson on	97
Brodie, Sir B., on the theories of animal heat	334
Bronchitis, chronic, complicated with dysmenorrhœa	199
Brown, Mr. I. B., on rupture of the perineum	196
Bubo, M. Bonnafont's mode of treating	163
Burrows and Kirkes, Drs., on chronic renal disease	74
Bursa of flexor tendons of wrist, Prof. Syme's treatment of	352
Butcher, Mr. R. G. H., his splint for fracture of the femur	105
Calculi, Dr. Bence Jones on the solution of, by electricity	149
Camphor an antidote for the poison of strychnine	326
Cancer, M. Lebert on	39
" M. Cazenave's caustic for	42
" M. Devay's treatment of	41
" M. Gozzi's caustic for	41
" M. Manec's treatment of 150 cases of	41
" chimney-sweep's, cases of	308
" of the back of the hand, case of	308
" of the penis, case of	310
" of the tongue, Mr. Erichsen's case of	307
Cancerous diseases incurable by medicine	41
Cancrum oris, efficacy of chlorate of potash in	83
Carbonate of magnesia, its employment for warts	161
Caries of the ankle-joint, Prof. Syme's treatment of	352
Carpenter, Dr. W. B., on epidemic diseases	17
Cazenave, M., his caustic in malignant ulceration of the face	156
" M., his balms for diseases of the skin	161
Chemical substrata of the human body	225
Chemistry, organic, Dr. Hofmann on	263
Chilblains, broken, M. Cazenave's balm for	161
" unbroken, M. Cazenave's balm for	161
Chimney-sweep's cancer, cases of	308
Chloroform, Prof. Simpson on its use in Scotland	342
" in lead colic, Dr. Aran on	84
" in sympathetic vomiting	83
" its use as a local remedy	229
" its use in operations on the eye	163
Chorea, efficacy of the ammonio-sulphate of copper in	248
Cock, Mr. E., his cases of aneurism treated by compression	121
Cod-liver oil, modes of administering	76
Colic, efficacy of chloroform in	84
Collodion and castor-oil in the treatment of erysipelas	156
Concussion of the brain, Dr. Williams on	243
Convulsions, puerperal, causes and treatment of	212
" puerperal, treated by bleeding and antimony	213
Continued fever, Mr. Fletcher on its arrest by cinchonism	264
Cooke, Dr. W., his cases of hemorrhoids treated by nitric acid	143
Cooper, Mr. W., on the use of chloroform in operations on the eye	163
Cotton, Dr. R. P., on tubercle	68
Coulson, Mr. W., on the causes of death from lithotomy	150
Critchett, Mr., his treatment of ulcers of the leg	158
Croup, on the use of tracheotomy in	76
Curette, Mr. Walton's new	164
Cysts, Mr. Paget's observations on	279
" colloid, description of	285
" compound or proliferous, description of	286
" mucous, description of	284
" oleaginous, description of	285
" ovarian, Dr. Simpson on ruptures of	195
" ovarian, on the position of the patient in tapping	195
" sanguineous, description of	285
" seminal, description of	285
" serous, description of	282
" synovial, description of	282
Day, Mr. G. E., on the chemical substrata of the human body	284

	Page
Deafness, Prof. Syme on a cause of not hitherto described	164
" atonic, efficacy of guaco in	250
Deane, Mr. J., his plan of mechanical support in prolapsus ani	148
Delioux, M., on hyposulphite of soda and silver	246
Delivery, difficult, use of Dr. Oldham's vertebral hook in	253
Deposits, fibrinous, effects of in the blood	39
Diabetes, nature and treatment of	101
" use of permanganate of potash in	103
Diarrhœa, Mr. North on sulphuric acid in	85
Digitalis, use of in certain forms of ascites	48
Douche, Dr. Tyler Smith on the induction of premature labour by	169
" Dr. Shekleton's case of premature labour induced by	172
" Mr. Lacy's case of premature labour induced by	174
Dysmenorrhœa, Dr Bennet on	199
" use of biborate of soda in	199
" use of ferro-manganic medicines in	338
Dyspepsia, pathology and treatment of	82
" use of ferro-manganic medicines in	338
Ecchymosis and sprains, efficacy of guaco for	250
Ecthyma, Goulard's balm for	162
Eczema, chronic, Goulard's balm for	162
Eczematous eruptions, chronic, use of cod-liver oil for	350
Elbow-joint, Prof. Fergusson's cases of excision of	114
Electricity, Dr. B. Jones on the solution of calculi by	149
" animal, experiments in	328
Epidemic diseases, Dr. Carpenter on	17
Epilepsy, on the pathology of affections allied to	55
" uterine, employment of tracheotomy in	205
Epistaxis, tincture of mastic as an hæmostatic in	132
Erichsen, Mr. J., his case of epithelial cancer of the tongue	307
Erysipelas, external application of tincture of iodine in	157
" use of tincture of muriate of iron in	157
" use of collodion and castor-oil in	156
Eustachian tube, Mr. Toynbee on a simple method of exploring	167
" " and its muscles, Mr. Toynbee on	166
Excision of the elbow-joint, Prof. Fergusson's cases of	114
" of the knee-joint, Prof. Fergusson on	112
" of the knee-joint, fatal result of a case of	252
Eye, on the use of chloroform in operations on the	163
Face, new caustic for malignant ulcerations of the	156
Falot, Dr. R., on fomentations of digitalis in ascites	43
Famine as a cause of epidemic diseases	19
Fatigue as a cause of zymotic diseases	20
Fatty degeneration of the kidney, Dr. Johnson on	98
Femur, Mr. Butcher's splint for fractures of	105
Fergusson, Prof., his cases of excision of the elbow joint	116
" Prof., his cases of excision of the knee-joint	112
" Prof., his case of strangulated hernia	141
" Prof., on the operation for crural hernia	141
" Prof., on the treatment of aneurism	119
Ferro-manganic medicines, M. Petrequin on the use of	337
" preparations, formulæ for	338
Fever, Dr. Barclay on the use of sulphate of quinine in	23
" continued, on its arrest by cinchonism	264
Fibrine, softened, Mr. Lee on the morbid action of	327
Fibrino-albuminous diathesis, Dr. Ogle on	265
Fibrinous constituent of the blood in relation to disease	37
Fibro-plastic tumours, facts and conclusions of M. Lebert on	206
Fissure of the anus, treatment of	348
Fistula-in-ano, M. Alquie's treatment of	143
Fletcher, Mr. J. O., on the arrest of continued fever by cinchonism	265
Fracture of the femur, Mr. Butcher's splint for	105
" of the leg, Dr. W. Highmore's splint for	108
" of the leg, division of tendo achillis in cases of	110
" of the thigh, Mr. Hester's bed for	109

	Page
Fracture of the thigh, occurring spontaneously	111
Fuhrer, Dr. F., on inflammation in joints	117
Fuller, Dr. H. W., on rheumatism	42
Fungus of the testicle, on the removal of	350
Galvanic battery, Mr. Stringfellow's portable	206
Galvanism, its efficacy in poisoning by laudanum	248
Gangrena senilis, Prof. Syme's treatment of	351
Gastralgia, use of ferro-manganic medicines in	338
Gay, Mr. J., his case of obstinate ulcer of the leg	160
" Mr. J., on the surgery of rupture	189
Glover, Dr. R. M., on the administration of phosphorus	246
Glucosuria, M. Bouchardat on the treatment of	101
Gonorrhœa, on the employment of tannin in	162
Goulard's balm (oil of Saturn)	162
Gout and rheumatism, on the pathology of	45
" efficacy of the infusion of ash-tree leaves in	249
Grainger, Mr. R. D., on the influence of human effluvia	21
Grant, Mr. J., on the treatment of syphilis	162
Grigor, Dr. J., on Indian hemp as an oxytocic	333
Guaco, its use for serpent-bites, rheumatism, sciatica, and deafness	250
Guernsant, M., his treatment of erysipelas	156
Hall, Dr. M., on the efficacy of strychnine in impaired spinal energy	58
Hannon, M., his new mode of administering iodine	326
Hare-lip, Mr. Yates' case of	157
Headache, periodic, efficacy of sulphate of nickel in a case of	340
Heart, mode of origin of warty growths on the valves of	43
" use of ferro-manganic medicines in affections of	338
Heat, animal, Sir B. Brodie on the theories of	334
Hematocele of the thyroid gland, cured by free incision	256
Hemorrhage, as a cause of death in lithotomy	150
" after extraction of teeth, hæmostatic for	132
" post-partum, Dr. Ramsbotham's cases of	180
" source of in partial separation of the placenta	188
" uterine, Dr. Winn's cases of	187
" uterine, Mr. Crowfoot's case of	186
" uterine, Mr. Harrinson's case of	183
" uterine, Mr. King's case of internal	185
Hemorrhoids, Dr. Cooke's treatment by nitric acid	143
" internal, Prof. Syme's treatment of	348
Hemostatic, M. Pagliari's	343
" tincture of mastic employed as a	132
Hernia, crural, Prof. Fergusson on the operation for	141
" strangulated, Prof. Fergusson's case of	141
" strangulated, Mr. Gay on	139
Hester, Mr. J. T., on fractures of the thigh	109
Highmore, Dr. W., his splint for fractures of the lower extremities	108
Hilton, Mr. J., his cases of stricture	146
" Mr. J., his improved apparatus for continuous irrigation	257
Hoffman, Dr. A. W., on organic chemistry	263
Houghton, Mr. J. H., on prolapsus of the uterus and vagina	190
Human body, Dr. Day on the substrata of	225
" body, M. Barral on the statics of	336
" effluvia as a predisposing cause of epidemics	21
Hutchinson, Mr., his air-compressor of the testicle	153
Hyposulphite of soda and silver, M. Delioux on	246
Hysteria, Dr. Todd on the treatment of	54
" local, on some of the different forms of	48
Incontinence of urine, use of strychnine in	104
Indian hemp as an oxytocic, Dr. Grigor on	333
Infants, premature, apparatus for	203
Inflammation in joints, on the different forms of	117
Inman, Dr. T., on chloroform in sympathetic vomiting	83
Insanity, Dr. Winslow on the medical treatment of	313
Insect temperature, Mr. Newport's Researches on	334
Iodine, Dr. Merei's observations on	341

Page
Iodine, M. Hannon on a new mode of administering 325
" tincture of, Mr. Norris on its use in erysipelas 157
Iron, muriate of, its use in the treatment of erysipelas 157
" M. Petrequin on the use of manganese as an adjuvant to 327
Irrigation, continuous, Mr. Hilton's improved method of 257
Jenner, Dr. W., on the acute specific diseases 26
" Dr. W., on tubercle and phthisis 61
Johnson, Dr. G., on albuminifacient renal diseases 92
" Dr. G., on Bright's disease of the kidney 97
Joints, Dr. Fuhrer on the different forms of inflammation in 117
Jones, Dr. H. Bence, on the solution of calculi by electricity . . . 149
Kidney, Dr. Johnson on Bright's disease of 97
" Dr. Johnson on various forms of disease of the 92
" chronic disease of 74
" fatty degeneration of 98
" non-desquamative disease of 96
" waxy degeneration of 96
Kirk, Mr. G., on Galvanism in poisoning by laudanum 248
Kirkes, Dr. W. S., on rheumatism 42
Kiwisch, Prof., his method of inducing premature labour 170
Knee-joint, Prof. Fergusson's cases of excision of 112
" excision of, and fatal termination of the case 252
Kuchenmeister, Dr., on anthelmintics 86
" Dr., on phosphate of lime in oxaluria 101
Labour, difficult, Dr. Murphy on the use of the forceps in 28
" difficult, use of Dr. Oldham's vertebral hook in 253
" premature, Dr. Lee on induction of before the seventh month . . 176
" premature, Dr. Shekleton's induction of by the douche . . . 172
" premature, Dr. Tyler Smith on the induction of by the douche . 169
" premature, Mr. Lacy's case of premature labour induced by the douche 174
" tedious use of tartar emetic in 177
Lactation, its influence in causing abortion 177
Lacy, Mr. J. P., his case of premature labour induced by the douche . . 174
Lambert, M., his treatment of warts 161
Lange, Dr., on the use of tannin in gonorrhœa 162
Laryngeal and pharyngeal diseases frequently mistaken for phthisis . . 60
" shower syringe (Coxeter's) 74
Laudanum, efficacy of galvanism in poisoning by 248
Lebert, Dr., on Cancer 39
" Dr., on fibro-plastic tumours 206
Lead, Dr. Alderson on its effects upon the system 229
" and mercury, iodide of potassium a remedy for poisoning by . . 239
" colic, on the treatment of 232
" colic and lead paralysis, difference of character of 232
" colic, preliminary symptoms of 230
" paralysis, on the treatment of 233
" poisoning, Dr. Murphy's case of 235
Lee, Dr. R., on induction of labour before the seventh month . . . 176
" Mr. H., on the consequences of a vitiated condition of the blood . . 258
" Mr. H., on the morbid action of softened fibrine 327
" Mr. H., on obliteration of varicose veins 124
Leech-bites, tincture of mastic as an hæmostatic for 132
Leg, Dr. W. Highmore's splint for fractures of 108
" division of tendo achillis in fractures of the 110
" ulcer of, on the treatment of 158
" ulcer of, new mode of inducing cicatrization in 160
Lemon-juice, cases of rheumatism treated by 46
Leucorrhœa, Dr. Tyler Smith on the pathology and treatment of . . . 209
Lever, Dr. J. C. W., his cases of abscess of the abdominal parietes . . 323
" Dr. J. C. W., his case of paralysis of the bladder 217
Ligature, new method of applying in nævus 131
Liquor potassæ, action of on the urine in health 88
Lithotomy, Mr. Coulson on the causes of death from 150
Liver, M. Bernard's researches on the functions of 334
Mackenzie, Dr. F. W., on the source of uterine hemorrhage 188

	Page
Malignant ulceration of the face, M. Cazenave's caustic for	156
Mammary abscess, Mr. Birkett's treatment of	203
Manganese, on the use of as an adjuvant to iron	337
Mania, acute, Dr. Winslow on the treatment of	317
Mawer, Mr. J. R., his case of puerperal convulsions	213
Medical meteorology, Dr. Moffatt on	247
Melancholia, treatment of	321
Melsens, M., on iodide of potassium in mercurial and lead poisoning	239
Membrane, bronchial mucous, affection of in renal disease	74
Menorrhagia, Dr. Rigby's treatment of	29
Menstruation, conception, and lactation, relations between	177
Mercurial and lead poisoning, iodide of potassium a remedy for	239
Merei, Dr., his remarks on iodine	341
Meteorological tables, requirements in	243
Miasmatic effluvia as a cause of zymotic disease	19
Milk fistulæ, on the treatment of	207
Miller, Prof., on the treatment of aneurism	128
Moffatt, Dr. T., on medical meteorology	247
Morris, Dr. E., on the treatment of neuralgia	229
Mucous membrane—epithelium	81
Murphy, Dr., on the forceps in difficult labour	28
Milk, human, composition of in health and disease	208
Munro, Dr. J., his case of aneurism treated by compression	122
Muriate of iron, tincture of, its use in erysipelas	157
Nævus, Mr. Startin's mode of applying the ligature in	131
Narcotic inoculation, its efficacy in neuralgia	229
Nephritis, acute degenerative, morbid anatomy and pathology of	92
" chronic desquamative, morbid anatomy and pathology of	109
Nervous disorders, use of ferro-manganic preparations in	338
Neuralgia, Dr. Morris on the treatment of	229
" facial, M. Cazenave's ointment for	59
Newport, Mr. G., on impregnation of the ovum in the amphibia	214
Nickel, sulphate of, Prof. Simpson on the therapeutic action of	340
Nipples, chapped, M. Cazenave's balm for	161
Nitrate of silver, application of to the fauces and larynx	74
Nitric acid in the treatment of hemorrhoids	143
Norris, Mr. H., on the use of tincture of iodine in erysipelas	157
North, Mr. S. W., on the treatment of diarrhœa	85
Ogle, Dr., on the fibrino-albuminous diathesis	262
Oldham, Dr. H., on the use of a vertebral hook in difficult delivery	253
Ophthalmia, strumous, Mr. Wormald's treatment of	164
Organic Chemistry, Dr. Hofmann on	263
Os and cervix uteri, microscopical anatomy of	209
Ovarian cysts, Prof. Simpson on inflammatory and non-inflammatory ruptures of	195
" cysts, on the position of the patient in tapping	195
" tumours, Dr. F. Bird on the diagnosis, treatment, and pathology of	221
" tumours, chronic, Dr. Tilt on the diagnosis of	218
Ovunia, on impregnation of in the amphibia	214
Oxaluric, on efficacy of phosphate of lime in	106
Oxytocic, on Indian hemp as an	333
Paget, Mr. J., his cases of epithelial cancer	307
" Mr J., his lectures on tumours	272
Pagliari's hemostatic, composition of	343
Paracentesis thoracis, novel contrivance in	137
Paralysis of the bladder, from over distension after delivery	217
Parkes, Dr. E. A., on the action of liquor potassæ on the urine	68
Pericarditis and pneumonia, Dr. Todd's case of	267
Perineum, Mr. Brown on the treatment of rupture of	196
Petrequin, M., on the use of manganese as an adjuvant to iron	337
Phosphate of lime in oxaluria	100
Phosphorus, Dr. Glover's methods of administering	246
Phthisis, on laryngeal and pharyngeal diseases mistaken for	60
Pidduck, Dr. I., on camphor as an antidote to strychnine	326
Pleuck's mercurial balm	162

Page
Pneumonia complicated with rheumatic pericarditis 267
Poisoning by laudanum, effects of galvanism in 248
" by lead, case of 235
" by mercury, iodide of potassium a remedy for 239
Polypus uteri, Dr. Ramsbotham's remarks on complicated 201
" uteri, use of the ligature in 202
Post-partum hemorrhage, with severe after-pains 180
Potash, permanganate of, its use in diabetes 103
Pouget and Peraud, Drs., on the treatment of gout and rheumatism . . 249
Premature Infants, apparatus for 202
" labour, Dr. Lee on induction of before the seventh month . . 176
" labour, Dr. Tyler Smith on the mode of inducing by the douche . 169
" labour, Dr. Shekleton's induction of by the douche . . . 172
" labour, Mr. Lacy's induction of by the douche 174
Pritchard, Dr. E. W., on the medical uses of Mikania guaco 250
Prolapsus ani, Mr. Dean on mechanical support in 143
" of the uterus and vagina in pregnancy and labour . . . 190
" of the vagina, as a cause of fetid, phosphatic, mucous urine . . 193
Puerperal convulsions, Mr. Mawer's case of 213
" convulsions, Mr. Rose on 212
Pus, Dr. Todd on its presence in the urine 89
Quina, sulphate of, its use in the treatment of fever 23
Radcliffe, Dr. C. B., on the pathology of affections allied to epilepsy . . 55
Ramsbotham, Dr. F. H., his cases of post-partum hemorrhage . . . 180
" Dr. F. H., on complicated polypus uteri 201
Renal Disease, affections of the bronchial mucous membrane in . . . 74
Richardson, Mr. W. B., on the fibrinous deposits in the blood . . . 38
Rheumatic pericarditis and pneumonia, Dr. Todd's case of 267
Rheumatism, Dr. Fuller on the treatment of 42
" and gout, Prof. Bennett on the pathology of 45
" cases of, treated by lemon-juice 46
" efficacy of guaco in 250
" infusion of ash-tree leaves in 249
Rigby, Dr., his treatment of menorrhagia 354
Roe, Dr. Hamilton, on the recent uses of ammonio-sulphate of copper . . 248
Rose, M. C., on the causes and treatment of puerperal convulsions . . 212
Rupia, Goulard's Balm for 162
Rupture, contributions to the surgery of 139
" of the perineum, on the treatment of 196
" of the uterus, Mr. Bean's case of 179
Sampson, Mr. G. on the treatment of diabetes 103
Sarcina, ventriculi, on the treatment of 83
Sciatica, efficacy of guaco in 250
Scirrhus of the breast, use of ammoniated copper in 248
Scrofula, Dr. Wilkinson on 226
Sea sickness, chloroform as a preventive of 83
Secretions, Dr. Cl. Bernard on elective elimination by the 245
Serpent bites, Dr. Pritchard on guaco as an antidote to 250
" antidotes to 251
Shekleton, Dr., his case of premature labour induced by the douche . . 172
Simpson, Prof., on ruptures of ovarian dropsical cysts 195
" Prof., on the therapeutic action of sulphate of nickel . . . 340
" Prof., on the use of chloroform in Scotland 342
Smith, Dr. Tyler, on Kiwisch's method of inducing premature labour . . 169
" Dr. Tyler, on the pathology and treatment of leucorrhœa . . . 209
" Dr. Tyler, on tracheotomy in uterine epilepsy 205
" Mr. H., on the use of tracheotomy in croup 76
Specific diseases, acute, Dr. Jenner on 26
Spinal cord, on secondary degeneration of 343
" exhaustion, use of strychnia in 58
Splint for fractures of the femur, Mr. Butcher's 105
" for fractures of the leg, Dr. Highmore's 108
Stanley, Mr. E., his case of chimney-sweep's cancer 310
Startin, Mr. J., his treatment of acne and boils 161
" Mr. J., on applying the ligature in nævus 131

	Page
Stedman, Mr. J., on the use of tartar emetic in tedious labours	177
Stomatitis, ulcerated, efficacy of chlorate of potash in	83
Stricture, Mr Hilton's cases of	146
Strychnine, camphor an antidote for the poison of	326
" efficacy of an impaired spinal energy	58
" in incontinence of urine	104
Styptic, Pagliari's, composition of	343
Sulphate of Nickel, on the therapeutic action of	340
Sulphuric acid in diarrhœa, remarks on	85
Syme, Prof., his treatment of bursa of flexor tendons of wrist	352
" his treatment of caries of the ankle joint	352
" his treatment of fissure of the anus	348
" his treatment of gangrena senilis	351
" his treatment of incised wounds	352
" his treatment of indolent and callous ulcers	351
" his treatment of internal hemorrhoids	348
" his treatment of varicose ulcers	351
" his treatment of venereal ulcers	353
" on a cause of deafness not hitherto described	164
" on enlargement of the tonsils	349
" on the removal of fungus of the testicle	350
Syphilis, anti-mercurial treatment of in military hospitals	162
" secondary and tertiary, iodide of potassium in	244
Tæniæ, on the remedies for	86
Tanner, Dr. T. H., on the position of the patient in tapping ovarian cysts	195
Tannin, Dr. Lange on its use in gonorrhœa	162
Tartar emetic, Mr. Stedman on its use in tedious labours	177
Teeth, hæmostatic in bleeding after extraction of	132
Tenotomy in a case of fracture of the leg	111
Testicle, Mr. Hutchinson's air-compressor for	153
" fungus of, Professor Syme on removal of	xix
Tetanus, state of the circulation in	57
Thigh, fracture of, Mr. Hester's bed for	109
" fracture of, occurring spontaneously	111
Thompson, Mr. H., on tracheotomy	132
Thyroid gland, Mr. Bickersteth's cure of a large hematocele of	256
Tic douloureux, formula for	59
Todd, Dr. R. B., his case of pericarditis and pneumonia	267
" Dr. R. B., on some of the different forms of local hysteria	48
" Dr. R. B., on the presence of pus in the urine	89
Tongue, case of epithelial cancer of	307
Tonic, utility of guaco as a	250
Tonsils, Prof. Syme's treatment of enlargement of the	349
Toynbee, Mr. J., on artificial tympanic membranes	165
" Mr. J., on a simple method of exploring the Eustachian tube	167
" Mr. J., on the muscles which open the Eustachian tube	166
Tracheotomy, Mr. Thompson's new method of performing	132
" in croup, Mr. Smith on the use of	76
" performance of in uterine epilepsy	205
Tubercle, Dr. Cotton on	68
" Dr. Jenner on	61
Tuberculosis, Mr. Ancell on	63
" cause and prevention of	69
Tuberculous and scrofulous diseases, identity of	226
Tumours, Mr. Paget's lectures on	276
" cartilaginous, description of	300
" cystic, description of	279
" fatty, description of	288
" fibro cellular, description of	289
" fibro-plastic, M. Lebert's facts and conclusions on	206
" fibro-plastic, description of	296
" fibrous, description of	292
" glandular, description of	303
" ovarian, on the diagnosis of chronic	218
" ovarian, on the diagnosis, treatment, and pathology of	221

	Page
Tumour, painful subcutaneous, description of	290
" vascular, or erectile, description of	306
Turck, Dr. L., on the brain and spinal cord	343
Tympanic membranes, artificial, Mr. Toynbee on	165
Ulceration of the face, malignant, new caustic for	156
Ulcers, cancroid, use of ammonio-sulphate of copper for	248
" indolent and callous, Prof. Syme's treatment of	351
" of the leg, Mr. Crichett's method of treating	159
" of the leg, Mr. Gay's new mode of inducing cicatrization of	160
" phagedenic, Goulard's balm for	162
" varicose, Prof. Syme's treatment of	351
" venereal, Prof. Syme's treatment of	353
" venereal, Plenck's mercurial balm for	162
Urethra, Mr. Hilton's cases of stricture of the	146
Urinary calculi, solution of by electricity	149
" infiltration, as a cause of death in lithotomy	152
Urine, Dr. Parkes on the action of liquor potassæ on, in health	88
" Dr. Todd on the presence of pus in the	89
" fetid, phosphatic, and mucous, Dr. G. Bird on a cause of	143
" incontinence of, use of strychnine in	104
Uterine epilepsy, performance of tracheotomy in a case of	205
" hemorrhage, Dr. Ramsbottom's cases of	180
" hemorrhage, Dr. Winn's cases of	187
" hemorrhage, Mr. Crowfoot's case of	186
" hemorrhage, Mr. Harrinson's case of accidental	183
" hemorrhage, Mr. King's case of	185
" hemorrhage, source of in separation of the placenta	188
" mucous membrane,—epithelium	202
Uterus, Mr. Bean's case of rupture of the	179
" case of bony tumour of	214
" and vagina, prolapsus of in pregnancy and labour	190
Vagina, prolapsus of, a cause of fetid, phosphatic, mucous urine	193
" prolapsus of, during labour and pregnancy	190
Van Owen, Dr. B., his case of fracture of thigh occurring spontaneously	111
Varicose veins, on the obliteration of	124
" veins, radical cure of, by obliteration	159
Varicocele, cases operated upon by Messrs. Coulson, Fergusson, and Partridge	155
" treatment of by the needles and twisted suture	154
Venereal ulcers, Plenck's mercurial balm for	162
" ulcers, on the treatment of	353
Vernois and Becquerel, MM., on the composition of human milk	208
Vomiting, sympathetic, use of chloroform in	83
Walshe, Dr. W. H., on cancer	39
Walton, Mr. H., his improved curette	164
Warts, use of carbonate of magnesia for	161
Warty growths on the valves of the heart	43
Water contaminated with lead, limit of danger from	235
Wilkinson, Dr. M. A. E., on scrofula	226
Williams, Dr. R. C., on concussion of the brain	243
Winn, Dr. J. M., his cases of uterine hemorrhage	187
Winslow, Dr. F., on the medical treatment of insanity	313
Wormald, Mr., his treatment of strumous ophthalmia	164
Worms, comparative value of the remedies for	86
Wounds, incised, Prof. Syme's treatment of	352
Yates, Mr. G., his case of hare-lip	137
Zymotic diseases, Dr. Carpenter on the causes of	17
" diseases, human effluvia a predisposing cause of	21